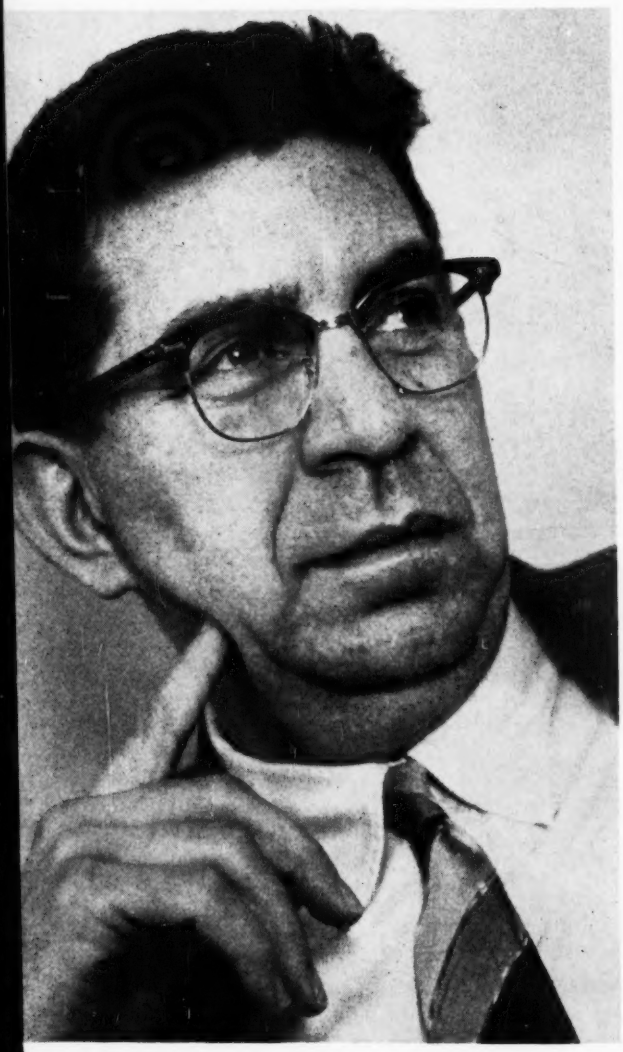
A McGRAW-HILL PUBLICATION

Chemical Week

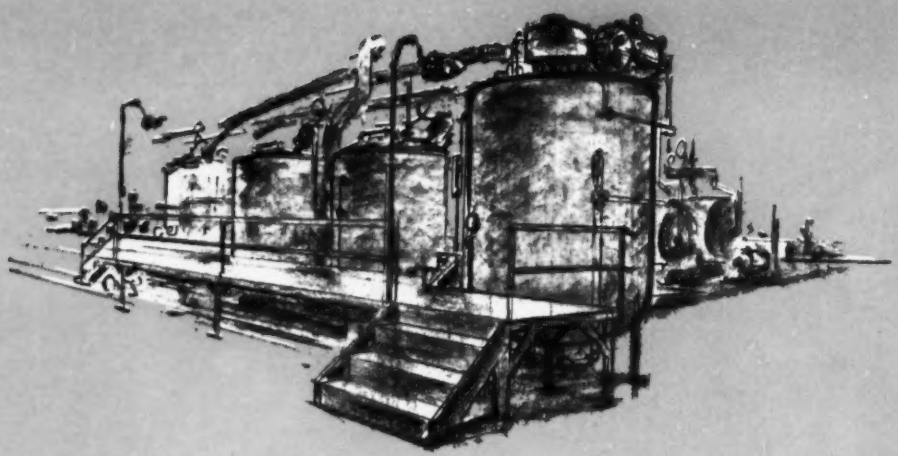


May 2, 1959

NOW

High pressure processing . . . including Hydrogenation

Truland announces the installation of Hydrogenation and Autoclave reaction facilities for high pressure operations.



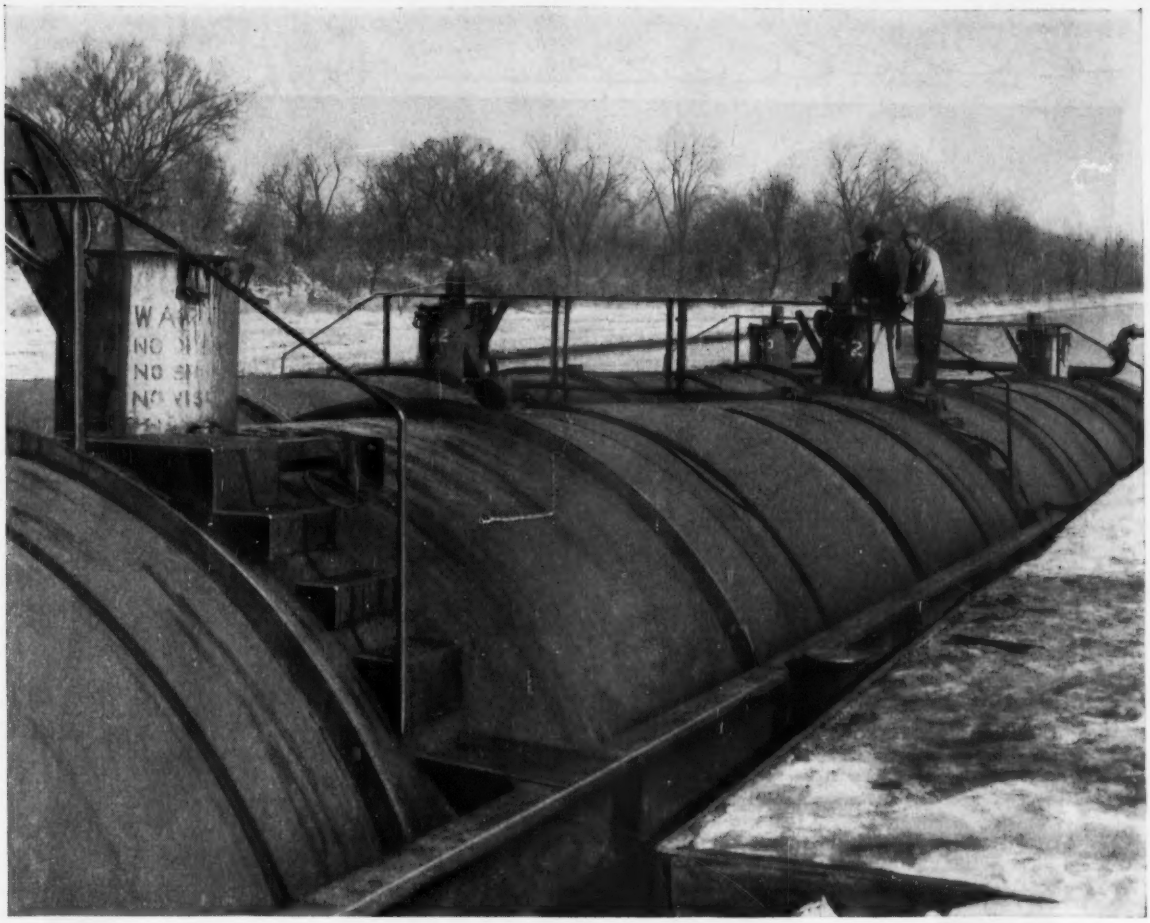
May we serve you? Your inquiry will be treated in confidence.

Send for new booklet which describes our operation

TRULAND CHEMICAL COMPANY
EAST RUTHERFORD, NEW JERSEY

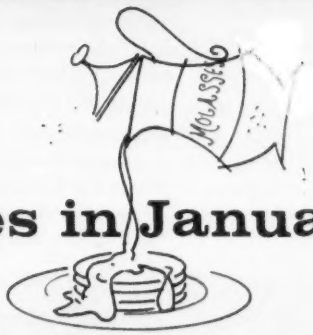
Division of **THE TRUBEK LABORATORIES**

TRULAND



who said

"slow as molasses in January?"



Handling an eight-inch unloading hose is one thing. A frozen valve in zero temperature is another. Still another is pumping molasses in January.

But it's all in the day's work at Sag Junction Terminal.

You see above Stanley Stawasz and Ralph Nystrom, terminal engineers, smiling at their success in getting the molasses flowing from a New Orleans barge into a 650,000-gallon storage tank.

Knappen Milling Company and Thomas E. Snyder Sons are pleased that they can serve their customers without delay, rain or shine (or frost) when storing at Sag Junction.

We'll be glad to discuss the many ways waterway shipment to Chicagoland and midwestern markets may improve your distribution, increase your profits.

Send for your copy of our illustrated book on Sag Junction Terminal. Address J. J. Connors, general manager, Terminal Services Division, North American Car Corporation, 231 South LaSalle Street, Chicago 4, Illinois

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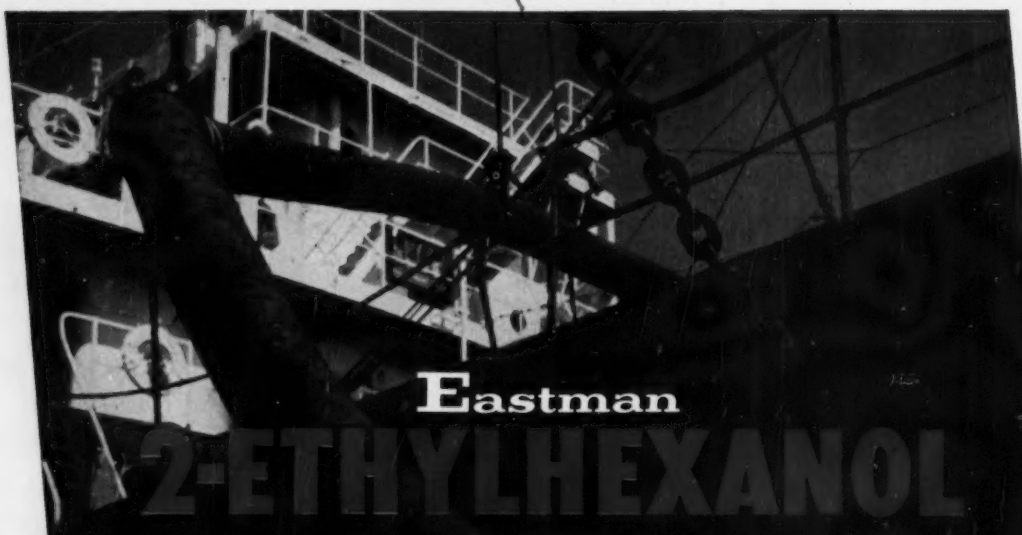

Eastman 2-ETHYLHEXANOL

The quality of Eastman 2-ethylhexanol is no secret. It's known and preferred 'round the world. In Europe. South America. Australia.

And with good reason.

Eastman is a basic manufacturer of this major industrial alcohol. Ample supplies of petroleum-derived raw materials and years of manufacturing experience assure prudent buyers a product consistent in quality, dependable in supply.

But even if you aren't half-way around the world you can still enjoy the advantages of Eastman 2-ethylhexanol. There are Eastman representatives serving the principal industrial areas across the nation. Call the one nearest you and place your next order with him.

Specifications:

Color, APHA	5 max.
Specific Gravity, 20°/20°C.	0.8325-0.8340
Acidity, as acetic acid	0.01% max.
Boiling Range, 760mm	181.0°-185.0°C.
Aldehydes, as 2-Ethylhexanal	0.70% max.
Unsaturation, as 2-Ethylhexenal	0.15% max.
Acid Reflux Color, APHA	100 max.
DOP Test Color, APHA	100 max.

Eastman CHEMICAL PRODUCTS, INC., KINGSPORT, TENNESSEE, subsidiary of Eastman Kodak Company

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tennessee; Atlanta; Chicago; Cincinnati; Cleveland; Detroit; Framingham, Mass.; Greensboro, N. C.; Houston; New York; St. Louis. **West Coast: Wilson Meyer Co.,** San Francisco; Los Angeles; Portland; Salt Lake City; Seattle

Chemical Week

TOP OF THE WEEK **MAY 2, 1959**

- **A first look at the product-group sales of two big process firms** comes in new annual reports ..... **p. 23**
- **Dimer polyesters angle for more urethane jobs,** offering cost reductions, novel molding properties ..... **p. 43**
- **Chemical companies' investment in waterside facilities grows,** even during recession ..... **p. 80**
- **Photography pinpoints dust control**—prevents misapplication of expensive equipment ..... **p. 84**

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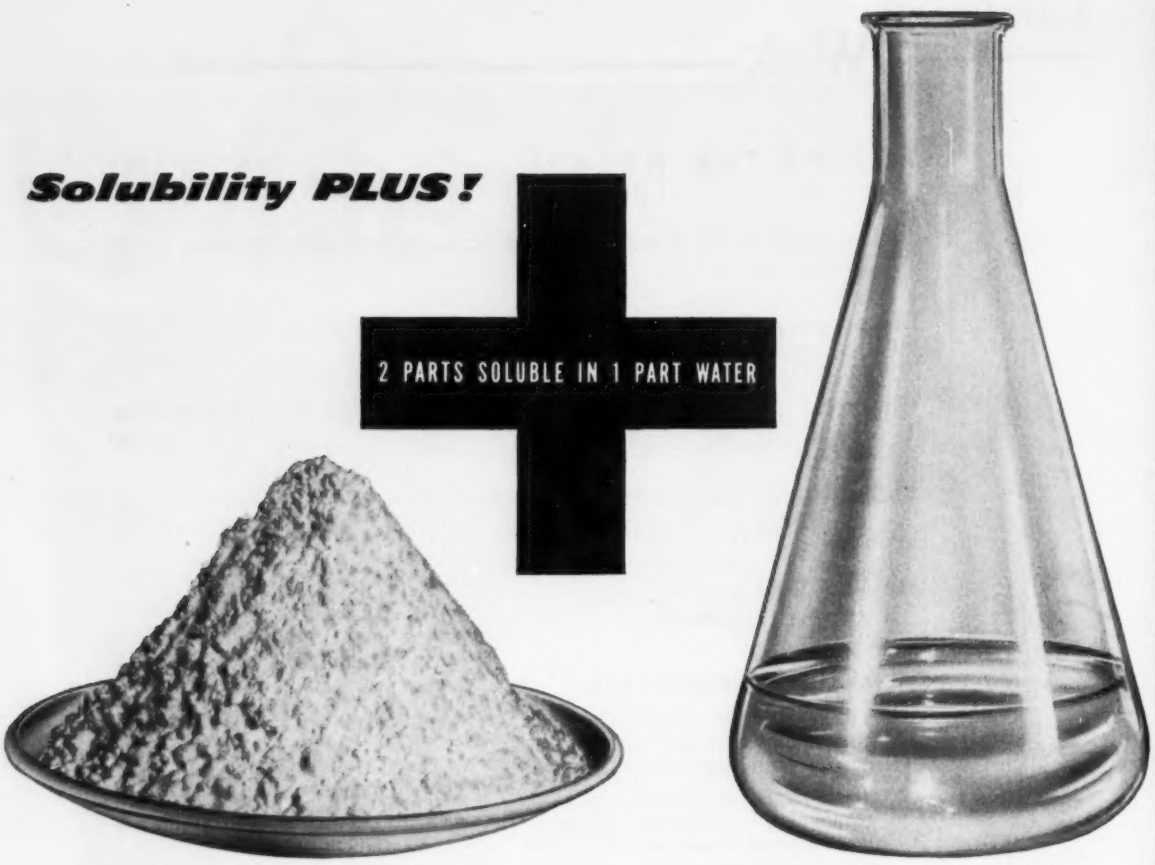

TETRAPOTASSIUM PYROPHOSPHATE

This high efficiency builder for liquid detergents, soaps and cleaning compounds is soluble 210 parts in 100 parts water at 75° F. It exhibits its exceptional synergistic, sequestering, water softening, dispersion and emulsifying properties. We pack it powdered or unground in 100 lb. lined bags and in 125 and 300 lb. drums. All Blockson jobbers warehouse it. Write for Technical Bulletin, sample.

BLOCKSON CHEMICAL COMPANY
Joliet, Illinois / Division of Olin Mathieson Chemical Corporation

Progress Report...

— Primary amyl acetate
— TERGITOL surfactants
— Higher acrylates

Solvent steps up drug yields

More efficient extraction solvents are now helping to increase production of penicillin and other antibiotics. One of the most useful is primary amyl acetate.

Primary amyl acetate is a highly selective solvent. This selectivity permits recovery of pure product without contamination by highly colored or other undesirable impurities.

Solvent losses are low with this low-cost ester. Primary amyl acetate's high ester content (98-100%), medium-high boiling point (135-150°C.), and very low solubility in water result in minimum solvent losses. Make-up requirements and costs are minimized. And primary amyl acetate is easy to recover by azeotropic distillation.

Primary amyl acetate contains only about one per cent alcohol and is free of low-boiling secondary amyl, butyl, and isobutyl esters. And CARBIDE's expanding production assures a continuing supply of this unique all-primary amyl ester.

The advantages of this extraction solvent can result in cost savings and extra profits in your extraction processes. Your CARBIDE representative can supply detailed information on the use of primary amyl acetate, and he will help you evaluate this extractant.

TERGITOL surfactants are low-foaming

The polyalkylene glycol ethers produced and marketed by CARBIDE under the trade-mark TERGITOL are powerful oil and water emulsifiers and detergents with low-foaming characteristics. TERGITOL nonionics XD and XH are soluble in water even at relatively high temperatures. XD has a cloud point of 60°C. to 70°C. in 0.5 per cent solution, while XH has a cloud point of over 90°C. Both are 100 per cent active white, waxy solids.

TERGITOL nonionics are useful in formulating emulsifiers for solutions of insect and plant toxicants, such as DDT, Parathion, Chlordane, Toxaphene, and 2,4-D and 2,4,5-T esters.

They are stable when stored, unaffected by water of any hardness, and are extremely efficient emulsifiers.

For your copy of CARBIDE's 42-page booklet containing a great variety of emulsion formulations for TERGITOL Surface Active Agents, please check the coupon.

Higher acrylates at lower prices

To encourage greater use of the higher acrylates, CARBIDE has reduced the price of butyl acrylate and 2-ethylhexyl acrylate by 10 cents a pound within the past year. The new delivered prices are:

	Tank Car Lots	Carload, Truckload Lots—Drums
butyl acrylate	55.0¢ lb.	57.5¢ lb.
2-ethylhexyl acrylate	45.0¢ lb.	47.5¢ lb.

Prices are 1.5 cents higher in Western United States.

These lower prices mean that it is now possible to incorporate the premium qualities of the higher acrylates in vinyl acetate copolymers at competitive costs.

CARBIDE's higher acrylates improve polymers in the following uses:

In latex paints, low concentrations of 2-ethylhexyl acrylate copolymerized with vinyl acetate, vinyl chloride, or styrene give excellent, internally plasticized resins. In addition 2-ethylhexyl acrylate improves low temperature coalescing properties, color retention, and water and alkali resistance.

Butyl acrylate copolymerized with acrylonitrile or methacrylonitrile gives hot oil and ozone resistant rubber useful for tough gasketing applications.

Homopolymers of 2-ethylhexyl acrylate are good adhesives and bonding agents. Copolymers of vinyl acetate and higher acrylates are suggested as textile finishes. In lubricating oils, copolymers of the higher acrylates should be investigated as viscosity index improvers and pour point depressants. For more information, talk to your CARBIDE Technical Representative.

Tear out this coupon. Check the boxes on which you'd like more information, and mail to Dept. H, Union Carbide Chemicals Company, 30 East 42nd Street, New York 17, N. Y.

- ☐ Surfactants.
- ☐ Send me the address of the nearest Carbide office.

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And remember, there is a CARBIDE sales office near you where you can obtain the services of a CARBIDE Technical Representative. His wide industry experience is backed both by extensive chemical training and by Technical Specialists.

The terms "Tergitol" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

UNION CARBIDE CHEMICALS COMPANY
DIVISION OF
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DO WHAT OVER 450 OTHERS HAVE DONE!

Here are a few industries that checked and chose Ohio recently.

STEEL:
National Tube Division, U.S. Steel Corp., new plant at Lorain ($5,000,000).

PLASTICS:
Durez Plastics Company, new plant at Kenton ($5,000,000).

RUBBER:
Moulded Rubber Products, Vernay Laboratories at Yellow Springs ($750,000).

CEMENT:
Columbia-Southern Chemical Company, new plant at Barberton ($7,000,000).

GLASS:
Pittsburgh Plate Glass Company, new plant at Crestline ($2,000,000).

ALUMINUM:
Kaiser Aluminum, new plant at Belpre ($2,000,000).

CHEMICALS:
Diamond Alkali Company, new research center at Painesville ($3,000,000).

AUTOMOTIVE:
Ford Motor Company, new plant at Lima ($13,000,000).

ELECTRONICS:
Bird Electronic Corporation, new plant at Solon ($150,000).

METAL FABRICATION:
Sunray Stove Co., new plant at Delaware ($1,500,000).

FOOD:
Campbell Soup Company, new plant at Napoleon ($7-10,000,000).

Check Ohio for your Industrial Growth

Want proof industry is booming in Ohio? More than 450 companies have invested over $450,000,000 in new plants and expansion during the last two years.

Ohio is now *the No. 2 state in value added by manufacture*, thanks to such advantages as: Central location . . . unsurpassed transportation . . . easy access to raw materials . . . vast pool of skilled labor . . . balanced economy favorable to business profit.

Ohio's state and local governments want and welcome new industries — large, medium and small.

Check Ohio in planning your company's future. It offers the best combination of *Markets, Materials, Men.*

For detailed information on available industrial sites or any aspect of plant location in Ohio, write or phone Division of Economic Development and Publicity, Ohio Department of Commerce, Columbus 15, Ohio.

If you're looking to the future . . . locate in OHIO

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Pennsalt's new shipping container for aqueous hydrofluoric acid combines a steel protective shell (ICC-6J) with a liner (ICC-2S) of premium grade black polyethylene for long, dependable service.

Pennsalt's safe handling aids include a technical manual covering handling, storing and returning the new drums, with diagrams and detailed instructions for unloading methods . . . and a wall chart for ready reference by plant workers. Both of these are available through your Pennsalt salesman.

Pennsalt's personal service provides technical aid by qualified engineers to help you on special problems.

See your Pennsalt salesman now for aqueous HF handling aids, and for full information on technical service and ordering.

This ICC-2S liner of premium grade black polyethylene is an integral, factory-assembled feature of the new Pennsalt HF drum.

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"EDITORS DON'T KNOW how much we public relations men prefer to deal with a publication where the editors have clearly defined areas of responsibility, so that we know whom to contact with a given story." So said Phil Gisser of National Distillers at the Boston ACS meeting. His topic: editorial evaluation of business magazines.*

The comment is a good one. And we of CHEMICAL WEEK's staff of 27 full-time editors hope we qualify.

Obviously, with a staff of this size—largest in the chemical publishing field, and slated to go up to 28 next week—such a definition of editorial responsibilities is a must. While most of the ideas for CHEMICAL WEEK stories are generated by these staff members or by our regional editors and the supporting McGraw-Hill news network, we do appreciate story suggestions from others. To help those of you who work with us, we're now writing up a concise summary of the subject areas covered in each editorial section. The summary lists editors and their phone extensions. Write us if you want a copy.

We have a second reason for making this list available now. On Monday, May 18, all McGraw-Hill telephone extensions will change numbers as they are "cut in" to a new, larger switchboard. The new board will have ten operators instead of seven; there will be 80 incoming lines instead of 60; "automatic recall" will make it easier to transfer calls.

Of course, anybody can write job definitions or reorganize telephone systems. Such moves are not much in themselves, but we hope they're indicative of what CHEMICAL WEEK is trying to do. We're mindful of Phil Gisser's words: "Despite any other evaluation technique, we frequently choose to work with those publications that are easiest to work with."

*The opposite point—how an editor evaluates a company's public relations department—was discussed by *CW* Assistant Managing Editor Bill Olcott. Copies of his paper are available.

H. C. Johnson

Editor-in-Chief

Retired Workers vs. Russia

TO THE EDITOR: I have recently been drawn into some discussions that have a bearing on the durability of our democratic way of dealing with our industrial problems as our ways are drawn more and more to grips with the ideology offered by Russia. . . .

The problem in question deals with our method of retiring from industry those workers who have become 65, regardless of their health, financial status, and desire to continue an active life. The large majority of these workers need some further revenue-bearing opportunities. Under these conditions, enforced idleness breeds frustration and discontent.

There is a constructive movement —called "Task Force 65"—being sponsored by the Industrial Chamber of Commerce of New Jersey for re-employment of retired personnel who are active and possess some mechanical skill. . . .

It appears that the Industrial Chamber of Commerce cannot serve the personnel from the research and chemical industries so well as they can those from the industrial trades, since most of the chemical and research personnel have not specialized in mechanical skills and would be at a disadvantage in securing employment outside of their sphere of training.

Is it not possible for the chemical industry and those serving it to find some area of service where the retired but healthy personnel coming from the fields of chemistry and research could find constructive re-employment?

From a casual glance, it appears that the area of literature research would be a natural habitat for personnel retiring from the greater activities of pilot-plant research, often with shift work and hurry-up breakthrough programs. In the quiet of literature research, it would seem that the elderly man would be no greater insurance risk than the younger man under the more vigorous program. As the retired worker is faced with the loss of social security benefits if he earns more than $100 a month, he is usually satisfied with part-time work, so that one full-time job can usually give work for several retired men.

The reservoir of retired help could no doubt be tapped at a reasonable cost figure. . . .

I believe that the constructive ideas sponsored by the Industrial Chamber of Commerce may be well worth duplicating in the chemical and engineering professions. . . .

ANGUS R. BLAKELY
220 Montague Place
South Orange, N.J.

Mountains in Brief

TO THE EDITOR: Your colleagues certainly did a remarkable job of turning a mountain of information into an interesting, concise account of our marketing activities for our Arolon 1000 (*CW, Mar. 28, p. 47*). . . .

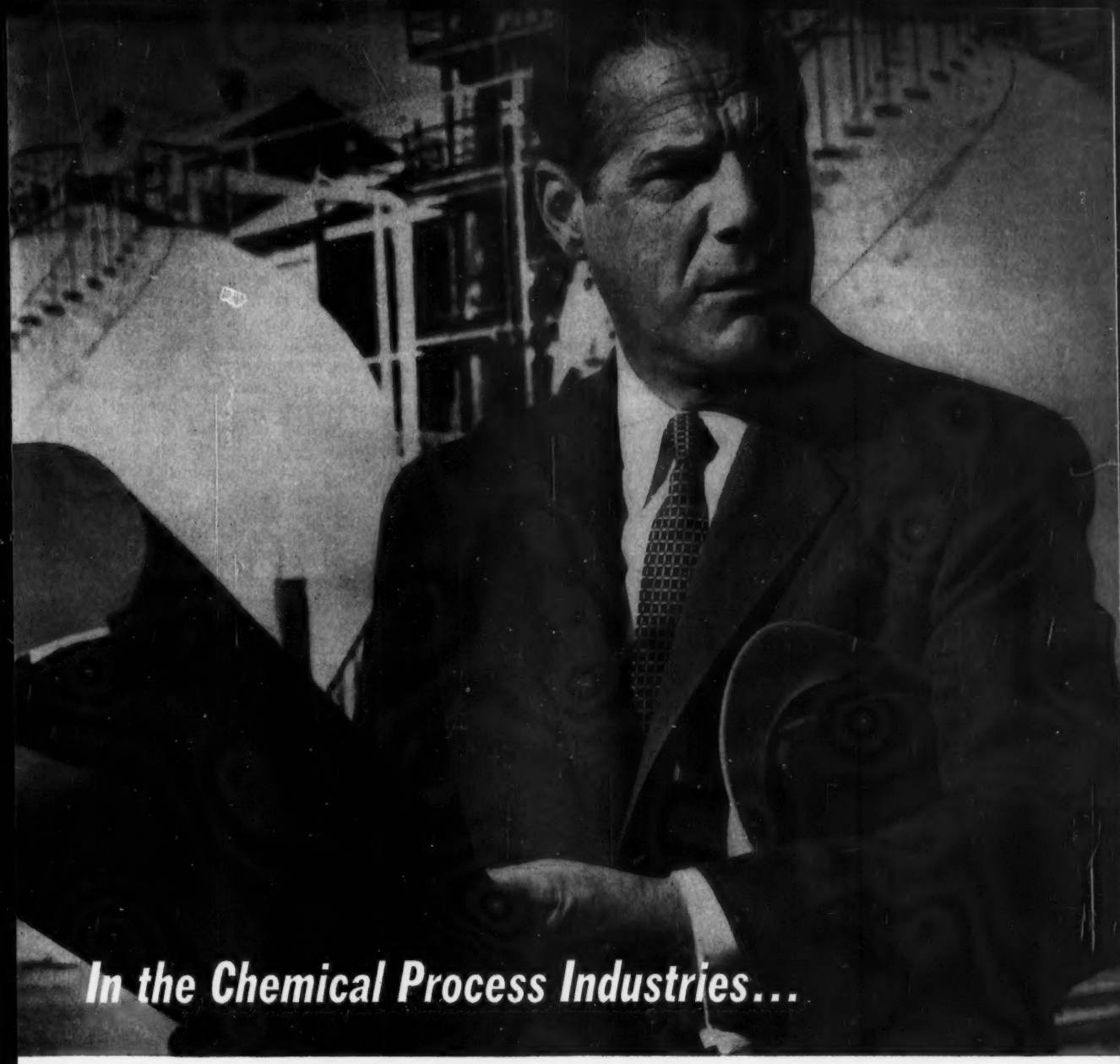
JOHN A. WICKLAND
Archer-Daniels-Midland Co.
Minneapolis

Equipment Sales, Ethics

TO THE EDITOR: Your interesting article in the March 14 issue of CHEMICAL WEEK on the sad, but well-deserved, plight of the equipment vendor (*p. 85*) points out the results of degrading the value of engineering effort. The equipment manufacturer has been doing essentially this by offering engineering time without charge. As a result, the value of this service has become overlooked and lost.

Actually, many equipment firms operate in violation of most state laws governing the furnishing of engineering services. Certainly, their willingness to provide this commodity without charge is in opposition to any code or canon of engineering ethics. The Pennsylvania Society of Professional Engineers states: "It shall be considered unprofessional and inconsistent with honorable and dignified bearing for any professional engineer to attempt to obtain or render technical services or assistance without fair and just compensation commensurate with the services rendered." This statement properly stigmatizes both the receiver and furnisher of free engineering services.

Such practices, whatever their



YOUR MARKET IS A MANAGEMENT MAN

Watch the driving force behind CPI progress . . . in new plant facilities, product development, engineering . . . in packaging, more strategic plant sites, new marketing methods. *Watch CPI-Management!* Department heads and above, they span every major function . . . from laboratory to pilot plant to production to front-office administration. Theirs is the responsibility to make profits . . . and no single group could be more concerned with the dollar-savings your equipment, materials or services can deliver. Your job's to tell them . . . in a place that gives you CPI-Management's attention while buying decisions are being made.

CHEMICAL WEEK is that place! Factual, fast-paced, interpretive . . . it spans the overlapping interests of CPI-Management — *at all levels, in all functions* — both technical and non-technical. 28 full-time editors . . . the field's top weekly in advertising pages . . . with more than 40,000 *all-paid* circulation . . . read, preferred and subscribed to *independently* by more management men than any other chemical process magazine. Get the facts. Find out how to sell more to CPI-Management . . . ***right here every week*** . . . in CHEMICAL WEEK!

and you can sell him in...

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Chemical Week

justification, lower the dignity and professional status of all engineers. In addition, this tends to lower the potential salary level, as there is a tendency to underpay those employees whose product is given away.

Therefore, one finds it difficult to generate much sympathy for the problems of the equipment vendors. They who have sinned are reaping a just reward.

E. L. CLARK
Professional Engineer
Pittsburgh

TO THE EDITOR: Your recent article "Do Equipment Makers Have a Valid Beef?" was most interesting. The many ramifications of this question and the apparent divergence of our sympathies has caused me to give it considerable thought.

It is well established that purchases are made primarily on the basis of either friendship or price. Assuming friendship isn't a factor in the picture presented in your article and assuming quality of product is equal, these purchases are made on a basis of price alone.

If price is cut to make a sale, it is immediately obvious, and competition will react to the situation at the next opportunity. If one company is to grow relative to others, price must therefore be cut less obviously. This is frequently done by giving superior service and engineering.

It appears that many equipment makers want to have their cake and eat it, too. They want more business but they don't want to cut price. As a consequence, they charge the competitive price and would like to charge for service, too. Why should any purchaser except those who consistently need this engineering service be willing to go along with it?

There is, of course, a third type of equipment maker not considered in your article that is in a position to command higher prices. He's the fellow who actually has done research and development. He has built up his patent position and technology so that not every "back-alley equipment fabricator" can copy his product. He doesn't need anyone to feel sorry for him—at least until the government gets after him for being too good.

No, equipment makers don't have a valid beef! If they want to be larger than the alley shop they are going to have to rely on research and development plus free service to keep them there. Seldom does a day go by but what we hear that some company making an engineered product has learned the lesson.

RALPH H. BEAUMONT, JR.
Director of Chemical Research
Huyck Felt Co
Rensselaer, N.Y.

TO THE EDITOR: All of us in the Chemical Equipment Sales Engineers Assn. of Chicago extend our thanks to you for the fine writeup. . . .

The problem . . . is a serious one. We appreciate your excellent coverage not only from the vendors' point of view but from the customers' as well. . . .

N. H. PARKER
President
CESEAC
Chicago

TO THE EDITOR: I was indeed pleased to see your article "Do Equipment Makers Have a Valid Beef?" in the March 14 issue. It airs an all-too-prevalent practice which, in my opinion, is fundamentally one of ethics.

It is inconceivable to me that the practice of plagiarism with regard to vendors' offerings can be defended by purchasing or engineering personnel on the basis of an honest act.

No loyalty to the company by said engineer or purchasing agent can justify dishonest and unethical procedures like this.

I feel there must be something wrong with top management that condones this practice. It is possible that it is unknown to higher-ups, but that is unlikely. Whenever and wherever it is practiced, I can assure you, as one of the vendor fraternity, that it becomes well known and the corporate image it reflects of that company is not bright and shiny!

Unless a buyer sets up rather complete equipment specifications on what he wants, and buys on that basis, he should hold inviolate the offerings of vendors and award the job to the deserving.

When complete specifications for equipment and performance are established by the buyer, all vendors are then on an even basis. It should be noted, however, that this practice frequently fences out offerings based on ingenuity and more efficient design with the end result that progress is not served.

In the other case, however, where bidding is based on only general specifications, the vendor who comes up with a better system, new wrinkle or more efficient setup is entitled to honest treatment by the buyer. It is all that simple—purely a case of honesty.

I have had broad experience in selling custom-designed capital equipment to all of our major industries and I regretfully confess that the chemical industry is one of the worst offenders in this regard.

Equipment makers do have a valid "beef," but I don't know what effectively to do about it. Perhaps more publicity on the subject is in order.

G. E. SEAVOY
Vice-President
Whiting Corp.
Harvey, Ill.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: H. C. E. Johnson, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

MEETINGS

Electrochemical Society, 115th national meeting, Sheraton Hotel, Philadelphia, May 3-7.

American Institute of Chemists, 36th national meeting; theme: Chemists appraise their role in today's economy; Traymore Hotel; Atlantic City, N.J., May 7-8.

Assn. of Records Executives and Administrators, 2nd annual conference on records management, Commodore Hotel, New York, May 8.

Industrial Security Institute, 3rd annual industrial mutual aid and disaster control conference, Baton Rouge, La., May 10-12.

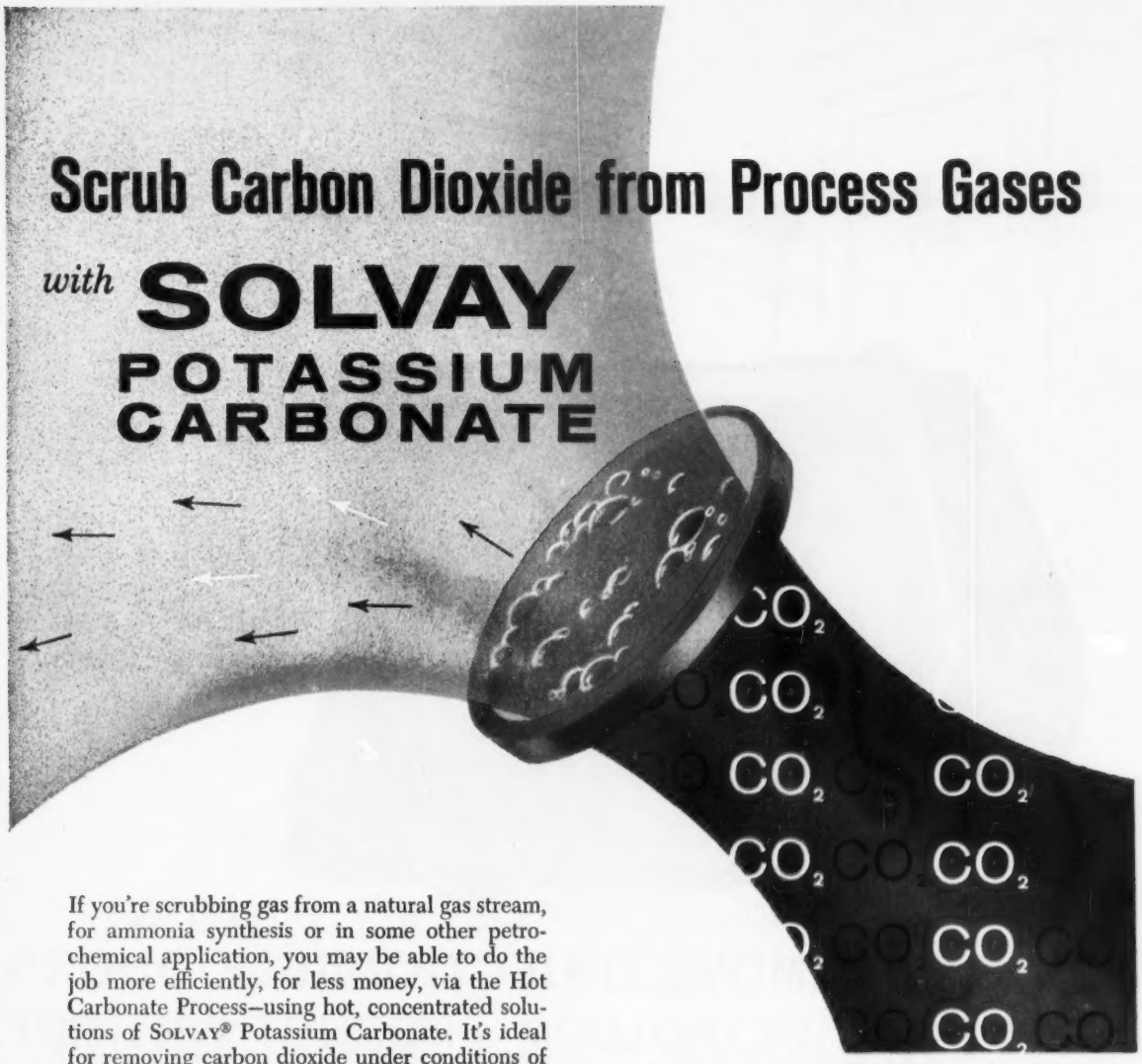
Flavoring Extract Manufacturers Assn., 50th annual meeting, Roosevelt Hotel, New York, May 10-13.

Symposium on Industrial Uses of Radioisotopes, Georgia Institute of Technology, Atlanta, May 11-12.

American Institute of Chemical Engineers, 40th national meeting, Muehleback Hotel, Kansas City, Missouri, May 17-20.

Scrub Carbon Dioxide from Process Gases

with SOLVAY POTASSIUM CARBONATE



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- ☐ "Improved Process for CO_2 Absorption"—Chemical Engineering Progress.
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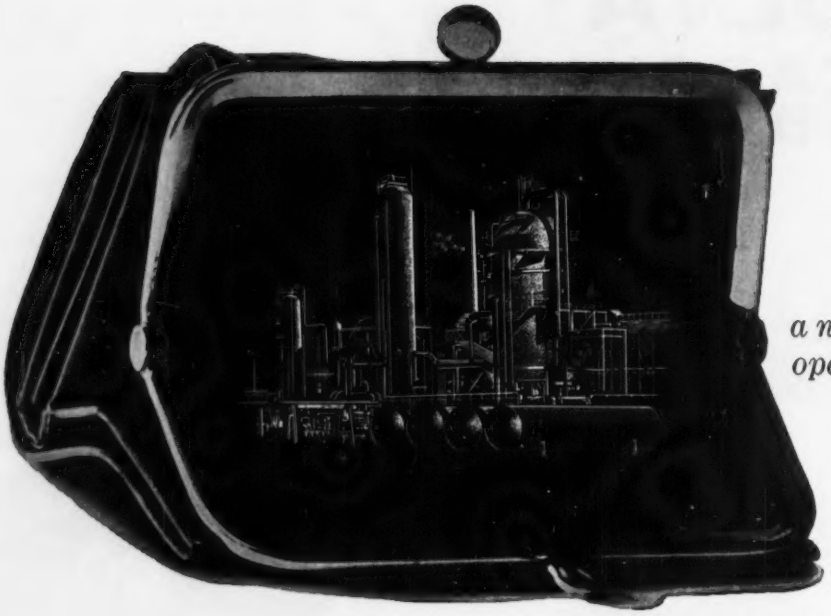

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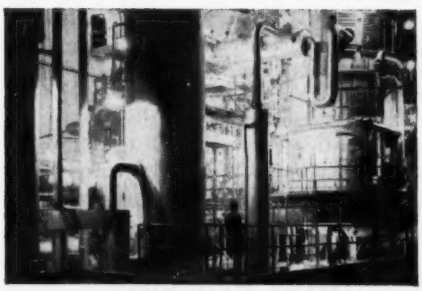

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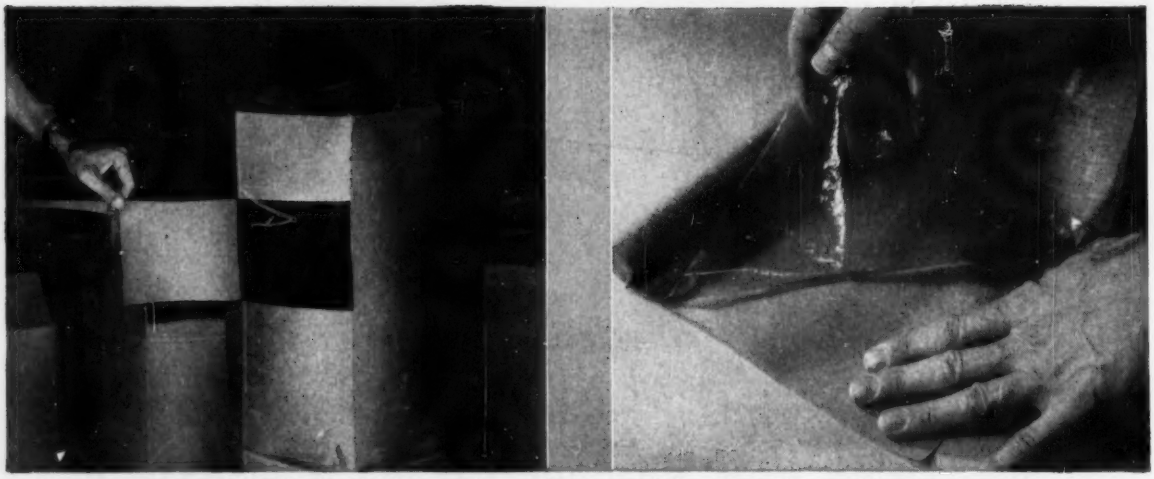
WITH SYL-OFF, THE SILICONE COATING



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Business
Newsletter

CHEMICAL WEEK
May 2, 1959

Columbia Gas and Colgate-Palmolive are seeking new partners. Columbia wants chemical companies to build plants near its newly dedicated Columbia Hydrocarbon Corp. unit in Siloam, Ky. Available to neighboring plants are hydrocarbons that Columbia is extracting from natural gas. The firm could then work on some new projects, such as a new unit, now in the blueprint stages, to make ethylene from ethane.

And Colgate-Palmolive, at last week's annual meeting, disclosed it wants to get into the drug business by acquiring a small ethical drug firm. In addition, Chairman E. H. Little said the company would also try to find and develop four or five proprietary drug products this year, and about as many next year, as the first phase of its new program.

•

Who will get power from the giant $720-million Niagara hydro development? The New York State Power Authority has taken the first step in clearing up the matter.

The authority said total allocation for Niagara Falls is 1.7-million kilowatts—200,000 of which will be set aside for industrial expansion confined to within 25 miles of the project.

CPI firms in Niagara Falls were pleased with SPA's plans—though they say there's still much to be done. Hooker's President Thomas Moffitt, for example, told *CW* that meetings of the area's Basic Industries Committee, comprised of the big power users in Niagara Falls, are scheduled to determine whether the power allocation is adequate and what the specific requirements of individual companies will be.

Power costs are estimated at 4.32 mills/kw. hour—approximately .25 mills higher than the current cost of St. Lawrence power.

•

Exploding weed-killer chemicals killed three men and injured five others last week at the Thompson-Hayward Chemical Co. (Kansas City, Kan.). The blast destroyed seven chemical tanks and leveled a block-long concrete building. Damage was estimated at $1 million. The plant uses heavy quantities of isopropyl alcohol, methanol, acids, and other solvents.

And in England, three more men were killed and 13 injured by an explosion at Imperial Chemical Industries' new oil gasification plant at Billingham. The $25.2-million plant had only recently started up and was still not in full operation. Reports pinpoint the blast in the oxygen section, but ICI will not comment on the cause until its investigations are complete.

•

All branches of the CPI are sharing in the current boom (*p. 21*). In the rubber industry, U.S. Rubber's first-quarter sales and earnings rose 27% and 162%, respectively above year-ago levels; and

General Tire & Rubber achieved gains of 42% on sales and 24% on profits.

Among makers of forest products, Crown Zellerbach reports an 11% rise in sales and a 28% boost in profits; and Rayonier discloses that a 26% hike in sales led to a smashing 536% gain in net income.

Similarly jubilant tidings come from other CPI segments: Texaco tells of all-time high volume and second-highest earnings in the first quarter; for Corning Glass, sales were up 16.6% and earnings 80.5% Kennecott Copper's sales of metals and metal products climbed from $84.8 million in the first quarter of '58 to $130.6 million in the quarter just ended; and Corn Products' sales and earnings both rose nearly 4%. Lehn & Fink notched a 10.8% rise in sales and an 8.1% hike in earnings; G. D. Searle's sales were up 5.9%, but earnings inched up less than 0.1%

For Lithium Corp. of America — which has a common-stock offering scheduled for the middle of this week — sales were expected to show a nearly 8% increase, to more than $2.8 million; the earnings hike is estimated at more than 30%.

•

With business so good, the CPI growth rate is due for a pickup.

Allied Chemical is proceeding with design engineering work on its projected polyethylene plant that outsiders expect will be built at Orange, Tex. (*CW, April 25, p. 47*); but the company still isn't identifying the site. Also look for Allied to increase capacity of its Tonawanda, N.Y., plant, which produces polyethylene for extrusion into high-strength pipe; a probable 50% expansion would bring this unit's capacity to 30 million lbs./year.

Air Products will build a $6-million plant at Glassmere, Pa., near Pittsburgh, to supply high-purity liquid oxygen, liquid nitrogen and liquid argon—primarily to the steel, metalworking and chemical industries.

Olin Mathieson's E. R. Squibb Division will put up a $2-million packaging, formulating and warehousing facility at its New Brunswick, N.J., site.

•

Court battle between Monsanto and Central Farmers Fertilizer Co. ended last week in Pocatello, Ida., when a U.S. district court judge signed an injunction agreed to by both companies. The two-year battle began with Monsanto's charges that Central Farmers used secret Monsanto know-how in building its Georgetown, Ida., elemental phosphorus plant. Under the new court order, Central Farmers is not barred from finishing construction of the plant, but is permanently prohibited from disclosing data that Monsanto claims are its trade secrets. Also, Central Farmers may not use this data in its own plants for 10 years. No damages were awarded.

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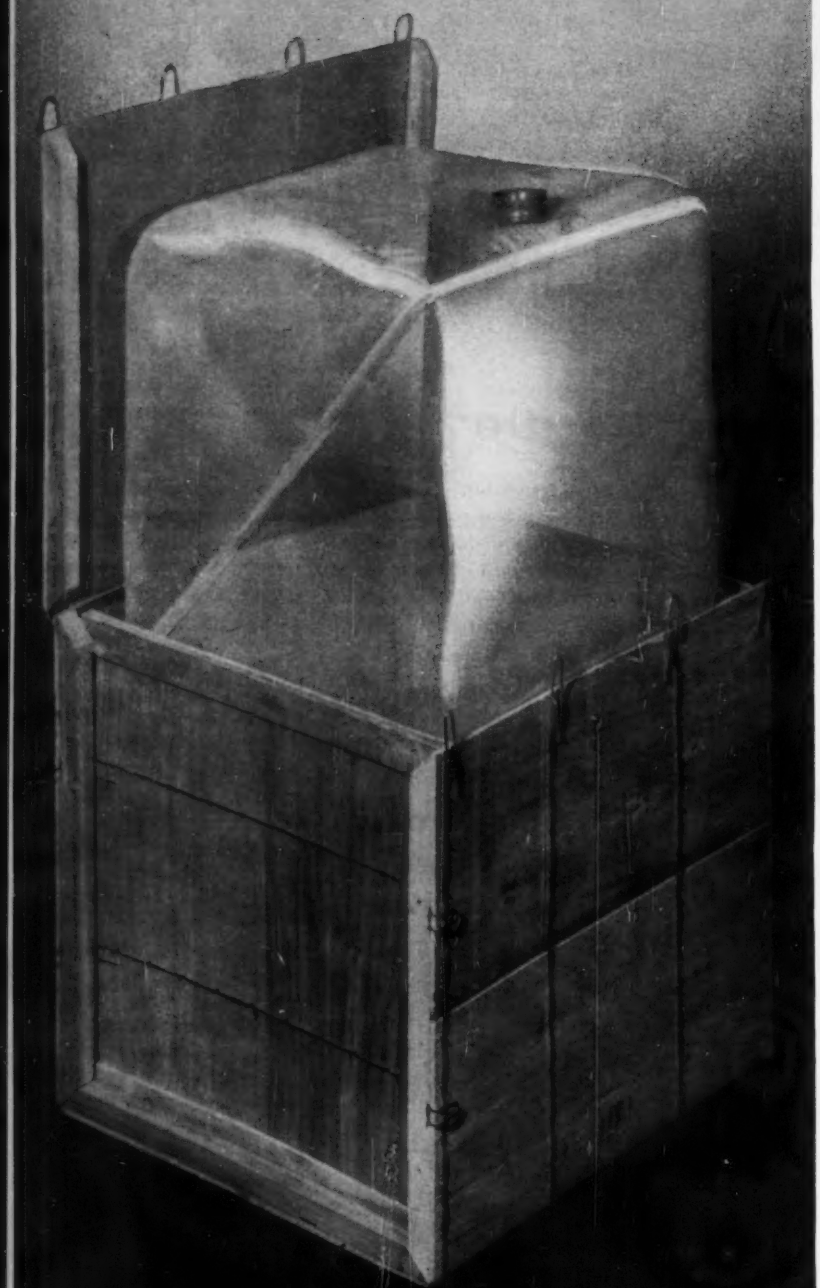

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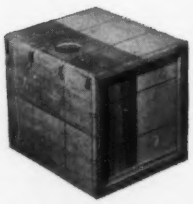

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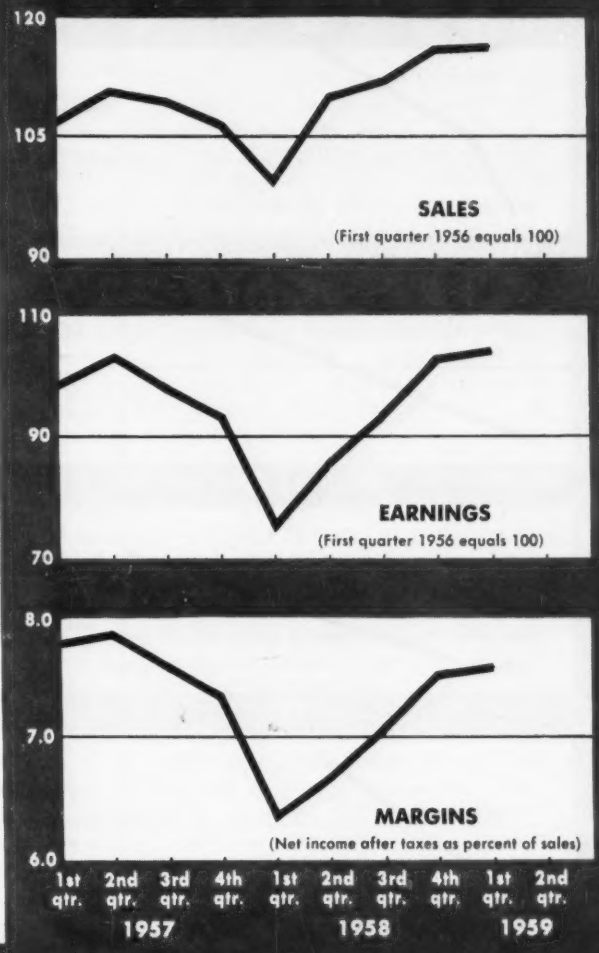
	Sales 1st qtr. '59	Change 1st qtr. '58	Net 1st qtr. '59	Change 1st qtr. '58	Margin 1st qtr. '59	Margin 1st qtr. '58
Air Reduction	47.9	10.8%	3.7	11.2%	7.8%	7.8%
Allied Chemical	169.1	13.6%	11.4	67.9%	6.7%	4.6%
American Cyanamid	145.9	10.0%	13.1	5.5%	9.0%	9.3%
American Enka[1]	23.7	53.3%	1.4	284.0%	5.9%	2.4%
Catalin Corp.	5.7	16.9%	0.1	18.8%	0.9%	0.9%
Chemstrand	54.1	68.2%	7.7	306.5%	14.2%	5.9%
Commercial Solvents	15.8	18.8%	0.7	86.3%	4.2%	2.7%
Diamond Alkali	30.0	11.7%	2.1	149.2%	7.1%	3.2%
Dow Chemical[2]	169.5	17.0%	13.7	72.9%	8.1%	5.5%
Du Pont	507.0[3]	22.2%	71.0[4]	78.4%	14.0%	9.6%
Foote Mineral	7.2	25.2%	0.7	42.1%	9.8%	8.7%
Freeport Sulphur	(N.R.)	(N.R.)	2.9	—0.04%	—	—
General Aniline	36.8	14.6%	1.5	83.9%	4.0%	2.5%
Harshaw Chemical	33.7	6.3%	1.2	50.8%	3.5%	2.4%
Hercules Powder	64.2	13.0%	4.9[5]	48.5%	7.6%	5.8%
Heyden Newport	13.6	24.6%	0.6	58.1%	4.7%	3.7%
Hooker Chemical[2]	34.9	20.3%	3.2	26.4%	9.2%	8.7%
Interchemical Corp.	29.5	13.8%	1.4	119.5%	4.6%	2.4%
International Min.	30.7	15.1%	2.0	131.9%	6.7%	3.3%
Koppers	52.0	—18.7%	1.0	6.7%	2.0%	1.5%
Mallinckrodt	8.3	—3.0%	0.2	18.5%	2.9%	2.3%
Metal & Thermit	9.8	16.5%	0.2	24.0%	2.2%	2.1%
Michigan Chemical	2.1	—26.3%	0.1	—10.8%	5.0%	4.2%
Minerals & Chemicals	(N.R.)	(N.R.)	0.5	260.5%	—	—
Monsanto Chemical[6]	149.0	17.5%	11.3	86.9%	7.6%	4.8%
National Distillers	128.1	12.0%	6.0	9.2%	4.7%	4.8%
National Lead[6]	122.1	12.8%	11.7	24.6%	9.6%	8.7%
National Starch	12.4	16.4%	0.7	18.7%	5.6%	5.5%
Nopco Chemical	8.0	15.8%	0.5	50.5%[7]	6.0%	4.6%
Olin Mathieson	159.9	25.3%	6.4	43.0%	4.0%	3.5%
Pan American Sulphur	(N.R.)	9.7%	0.8	4.3%	—	—
Pennsalt Chemicals	21.0	13.3%	1.2	64.0%	5.8%	4.0%
Pittsburgh Coke	15.0[5]	46.1%	0.7[5]	209.5%	4.3%	2.0%
Reichhold Chemicals	22.3	41.0%	0.5[9]	10.7%	2.1%	2.6%
Rohm & Haas	50.5	22.4%	5.1	78.2%	10.0%	7.3%
Stauffer Chemical	38.1	1.5%	3.7	35.4%	9.8%	7.3%
Texas Gulf Sulphur	14.0	15.6%	3.3	—6.4%	23.2%	28.6%
Thiokol Chemical	34.9	163.7%	1.3	377.4%	3.7%	2.1%
Union Carbide	363.6	23.7%	41.6	82.1%	11.4%	7.8%
Victor Chemical	14.8	13.3%	1.2	35.4%	8.4%	7.0%
Witco Chemical	12.1	33.9%	0.4	33.4%	3.7%	3.7%
Wyandotte Chemicals	19.6	16.6%	0.7	553.2%	3.8%	0.1%

CW Index of Sales and Earnings



(1) First 12 weeks of 1959 (2) Quarter ended Feb. 28 (3) Preliminary (4) Estimated net income, excluding GM dividends (5) Estimated (6) Parent company and U.S. and Canadian subsidiaries only (7) $95,151 profit on sale of securities excluded from '58 first-quarter earnings (8) Based on shipments (9) Excluding $239,000 profit on sale of investments

Good News—with Better to Come

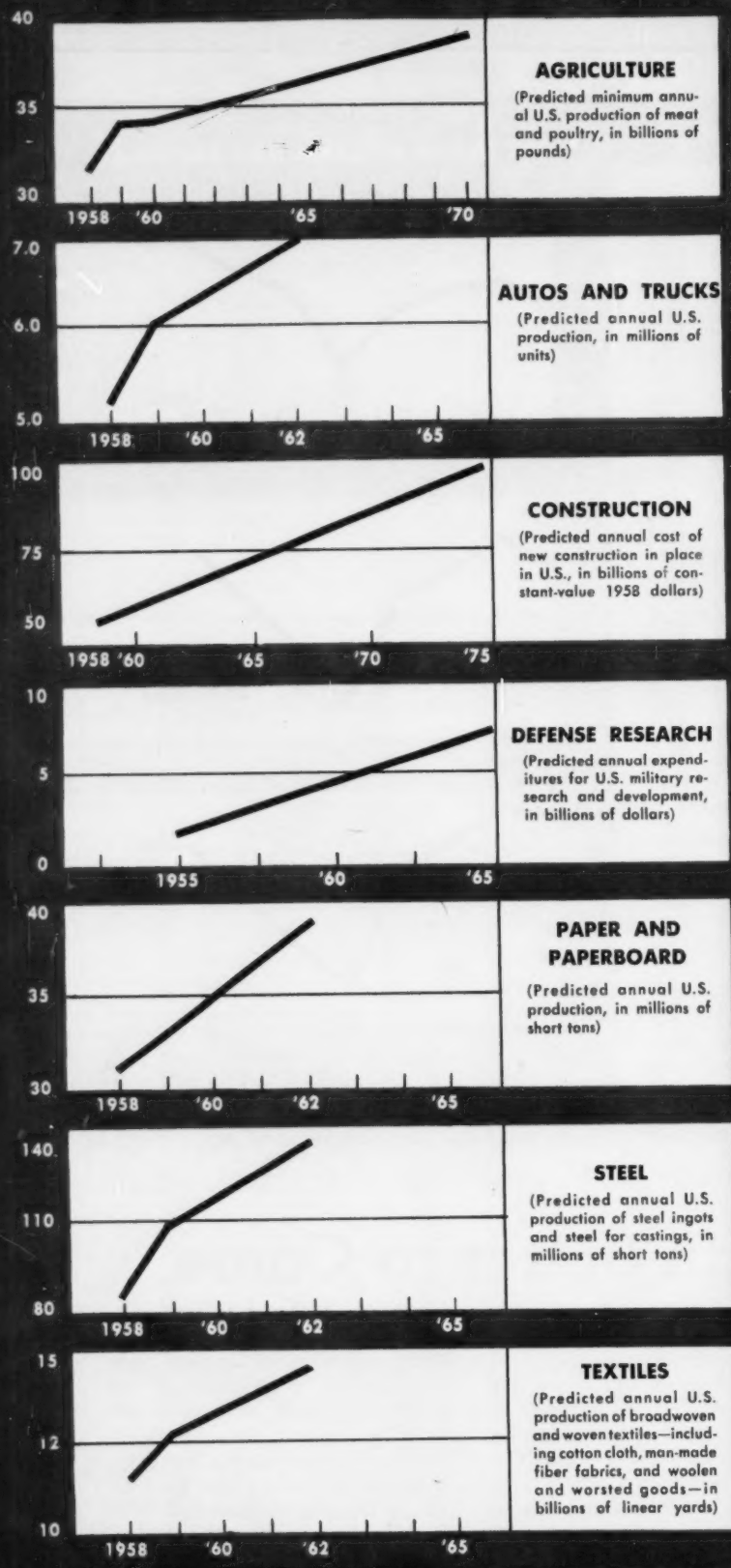
CPI companies' sales and earnings have been hitting new peaks so far this year; and latest indications are that the best is yet to come.

By this week, with most companies' first-quarter financial data totted up, these trends were apparent:

- For leading producers of industrial chemicals, sales, earnings and profit margins are definitely up from the previous quarter's levels, and are vastly higher than in the year-ago period (which was the darkest time of the recession).
- But for certain CPI groups that weathered the 1957-58 downturn in good style — such as pharmaceutical and sulfur producers — there's a downward pressure on profits, even though sales are holding up or rising.

Production at All-Time High: Output of chemicals and allied products reached an all-time high in March, according to the Federal Reserve Board, and individual companies confirm that production and sales are continuing at high levels. Late last week, for example, Monsanto Vice-President Irving Smith told San Francisco security analysts that his company is operating at more than 80% of capacity on an over-all, 24-hour, 365-day basis — a rate that augurs

Chemical Customers' Prospects*



*Trend-lines for principal chemical-consuming industries. Based on statistics compiled by U.S. Dept. of Agriculture, U.S. Dept. of Commerce, Ward's Auto Reports, Engineering News-Record, and Committee for Economic Development; and on companies' replies to 12th annual McGraw-Hill Survey of Business' Plans for New Plants and Equipment, 1959-62.

well for profits as well as for output.

It's clear that another chemical boom is under way. And to judge by the prospects for various industries that are major consumers of chemicals, the boom will be snowballing for several years to come (*see charts, left*). This is not to say that there can't be dips and lulls, but the rising trend-lines seem firmly etched for the period as a whole.

For one thing, chemical companies expect to participate in the general business upswing. Gross national product now seems to be climbing from the $465-billion/year rate recorded in the first quarter. And last week, some 250 investment counselors and economists attending the American Statistical Assn.'s conference in New York came up with a collective prediction that GNP will reach $480-485 billion by year-end; and that this index will go even higher during the first half of '60. (They also forecast that prices will rise by 1-1.5%, unemployment will drop to 4-4.5 million, and national credit policy will hold about steady for the next 9-12 months.)

Small-Car Spurt: In addition, there are a number of more specific influences that could bring further business gains. Hercules Powder economists see U. S. passenger car production as one of these. Their reasoning: while '59 auto output will probably be about 25% more than last year's low total, "it is nevertheless likely to be well below a level that is consistent with consumers' income." Prospects are, say the Hercules economists, that '60 models will be more attractive to the public than this year's; the '60 crop is likely to feature a variety of "compact" cars in which currently "extreme" styling is toned down.

For some chemical companies, at least, a further pickup in the current year is a good bet. It's noted that rate of operation in March for a group of about 20 major industrial materials was still somewhat less than 85% of capacity. Those same industries as a group operated at more than 90% of capacity at the comparable point in the 1954-55 recovery. This suggests that many lines are due for more gains in production and sales during the next few months.

Among the largest chemical companies, Du Pont, Allied, American Cyanamid and Monsanto reported

Drug Firms Feel Profits Squeeze

	SALES 1ST QTR. '59	CHANGE 1ST QTR. '58	EARNINGS 1ST QTR. '59	CHANGE 1ST QTR. '58	MARGIN 1ST QTR. '59	MARGIN 1ST QTR. '58
Abbott	33.3	0.8%	4.1	— 6.6%	12.4%	13.4%
Eli Lilly	48.1	6.5%	7.0	9.8%	14.6%	14.1%
Merck	56.0	11.6%	7.9	19.5%	14.0%	13.1%
Norwich	9.2	14.8%	1.0	31.2%	11.4%	10.0%
Parke, Davis	44.9	4.6%	6.9	— 3.3%	15.4%	16.7%
Pfizer	60.5	12.6%	6.3	— 2.9%	10.5%	12.1%
Schering	20.0†	— 0.1%	2.4†	—30.4%	12.0%	17.2%
S, K&F*	32.4	5.8%	6.1	27.5%	18.8%	15.6%
Upjohn	36.8	6.1%	5.1	— 2.0%	13.7%	14.9%

* Smith, Kline & French. † Estimated.

new sales records in the first quarter; Union Carbide and Dow's sales were not quite up to previous peaks.

Gains and Setbacks: In presenting the good news to stockholders, company executives offered explanations for current gains and cautious predictions for more of the same. Typical were the remarks of Diamond Alkali's Chairman Raymond Evans:

"The favorable earnings report is the result of continued strengthening of demand for all of our products, coupled with the tangible benefits now being experienced from last year's extensive cost-control program." And with the national economy still rising, "we anticipate a favorable level of sales and earnings over the remainder of 1959," Evans stated.

It appears that first-quarter business was particularly good for plastics and resins; both Monsanto and Rohm & Haas pointed to substantially increased shipments of these products.

In some lines, though, greater shipments did not mean higher profits. Texas Gulf Sulphur said tonnage sales increased in the past quarter, but earnings were hurt by increased production and transportation costs and by higher taxes.

Threat to Patents?

Warnings of the threatened destruction of trademark and patent protection in the European Economic Community (Common Market) and even in the U.S. were voiced last week at the 17th Congress of the International Chamber of Commerce.

The meeting drew businessmen from all over the free world to Washington for six days of conferences.

The patent threat arises from articles 85 and 86 of the Treaty of Rome, which set up the EEC in 1957. These provisions outlaw all agreements and acts that discourage trade between member states, or tend to crimp free competition.

What bothers European businessmen is that no provision is made for trademark or patent licensing agreements, which — of course — do limit production and trade within their limited areas.

No Guaranty: Right now, G. Oudemans, patent director for N.V. Philips (Netherlands) told a meeting, the prevailing opinion is that the articles do not apply to industrial property.

But, until they are definitely interpreted, producers setting up licensing agreements within the Common Market will have no assurance that the deals will not one day be declared null and void.

Even companies operating only within the U. S. could feel the repercussions of an adverse ruling, Oudemans warned. If the interpretation goes the wrong way, it might inspire U. S. officials to strive for a similar crackdown here; and — he asserted — that could foreshadow the end of industrial property rights.

Discord in Euromart: Keynote of the sessions was high confidence in the Common Market.

But, despite the show of optimism, private talks with chemical industry representatives revealed divergent attitudes about how far to go in integrating the European market.

A major source of disagreement is the problem of what to do about England, which wants to share the fruits of the Common Market while maintaining its preferential relationships with the other members of the British Commonwealth.

French producers are against broadening Euromart into a Free Trade Area, unless all members—including the United Kingdom—enter under the same conditions as those of the Common Market.

Underlying the French attitude is fear of competition with British chemical companies authoritative observers say.

German chemical producers, by contrast, would like to see economic integration spread as far as possible. They recognize Britain's Commonwealth obligations, and feel confident that they will be able to compete with companies like ICI on an equal footing. Besides, European trade "integration" is already a reality for the German producers — not so for the French. Of German chemical exports, 75% stay within Europe. Something over half of these exports are tagged for nations which are not in the Common Market but would be in a Free Trade Area.

Pinpointing Sales

Two CPI firms last week—for the first time — revealed sales breakdowns for their corporate divisions. The companies: National Lead and American Cyanamid. Until now, both have published consolidated sales only.

At Cyanamid's sparsely-attended annual meeting in Portland, Me., last week, the company revealed the product groups' proportions of total 1958 sales volume: pharmaceuticals, 29%; ag chemicals, 17%; industrials, 12%; organic chemicals, 18%; Formica Corp., 8%; plastics and resins, 8%; pigments, 7%; surgical and miscellaneous products, 1%.

Company Treasurer G. C. Walker said '59 sales so far are following much the same pattern — though an increase in both sales and earnings is expected by year-end.

Also last week, during a meeting of the New York Security Analysts, National Lead President Joseph Martino presented a similar sales breakdown for his company: paints, pigments and oils, 44%; fabricated metal products, 20%; die castings, 13%; oilwell drilling muds and services, 10%; railroad journal bearings, 6%; miscellaneous products, 7%.

National Lead, according to Martino, has equipment ready now to start turning out die-cast aluminum auto engine blocks in quantity.

At Montecatini building, Milan fair, signs of chemical buildup

Listening Post in Milan

Last week's huge Milan trade fair, largest of its kind in Europe, offered CPI management ample evidence of chemical progress abroad — information that can aid in the shaping of overseas expansion plans.

Of particular interest to chemical processors were the fair's "Chemical Days," April 15-17. Besides special emphasis on chemical exhibits, there were notable fact-packed speeches from Montecatini Vice-President L. Morandi, president of the Lombardi section of the Italian Chemical Society, and Dr. Giulio Natta, famed polymer researcher.

Morandi, reviewing progress of the Italian chemical industry, said '58 chemical output in that country was up 7% over '57. He also said chemical imports rose 7%, while exports were ahead 16%, bringing the import-export ratio into better balance.

Italian synthetic fiber output, said Morandi, has increased 700% since '53, plastics have shown a 400% increase, while total petrochemical output has jumped more than 200% in the past two years. Over-all chemical production, he added, is still 21 times greater in the U.S. than in Italy.

Fast Cool: Professor Natta described the "smectic" modification of polypropylene — a newly developed rapid-cooling process that gives greater transparency to polypropylene films. Density of this film, he reported, is in the .86-.88 range compared with .90-.91 for normal polypropylene.

Natta also disclosed research breakthroughs on polypropylene fiber. He said the waxy feel, noted by U. S. businessmen at last year's chemical exposition in New York's Coliseum, has been eliminated. New gains in wear resistance and dyeability were also cited.

In addition, Montecatini officials said that polypropylene fiber will be offered on a commercial scale by the end of '59. Initial price will be 60¢/-lb. — though this will come down as volume increases.

As visitors emerged from the large darkened auditorium, where the speeches were given, they were guided through a variety of chemical exhibits. About 350 of the exhibitors were plastics fabricators; 185, suppliers of industrial chemicals; 50, resin manufacturers; 5, detergent makers; 30, dyestuffs manufacturers; 65, producers of paints and varnishes. More than 100 chemical-processing equipment makers made a showing.

Among the U. S. chemical process and equipment firms represented: Dow Chemical, Union Carbide, West Virginia Pulp & Paper, General Electric, Perkin Elmer, Atlas Powder and Dow Corning.

In all, there were 13,315 exhibitors, 3,378 of them non-Italian. The show drew more than 4.3 million visitors.

Propellent Buildup

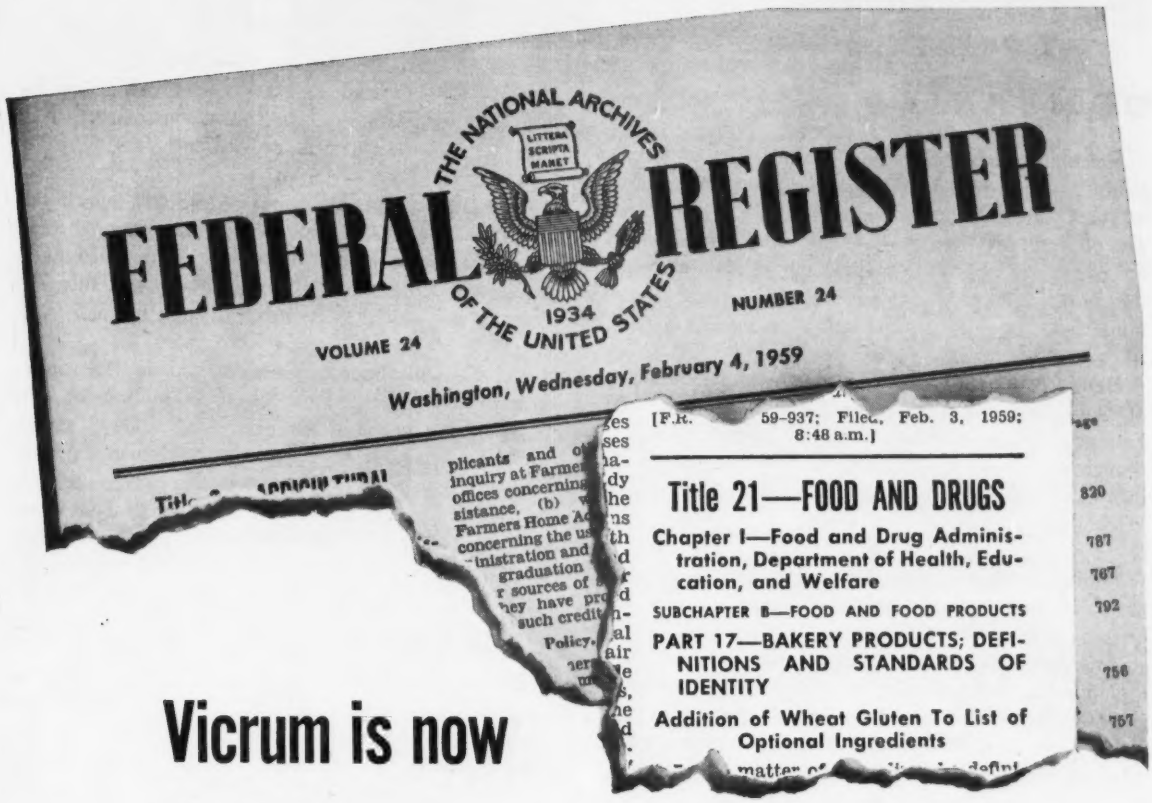
A new name joined the roster of rocket propellent producers this week, while a rocketry pioneer built up its research and production potential.

Gabriel Co. (Cleveland) — automotive-shock-absorber producer, which recently diversified into electronics and aircraft accessories — is now planning to make rocket fuels. It will build a plant in Mesa, Ariz., to produce solid fuel for moderate-thrust rockets, will also research exotic high-energy propellents. Construction is due to start next month. Cost of the first section: more than $1 million.

On completion, the unit will be operated by a newly formed subsidiary, Rocket Power Inc. The latter will be headed by Charles E. Bartley, former president of Grand Central Rocket Co. (Redlands, Calif.).

Growing in Space: And Grand Central, 93% owned by Petro-Tex Chemical Corp. — jointly owned in turn by Food Machinery and Tennessee Gas — has just completed a $2.5-million expansion program. Included: installation of three giant solid-propellent mixers, reportedly costing $500,000 each — the "world's largest," according to a company spokesman.

The company, moreover, has set up a new division — staffed by top-grade researchers — to handle "advanced concepts for space propulsion." Its research chief will be solid-propellent expert Albert D. Camp, formerly head of the Naval Ordnance Test Station at China Lake, Calif. Also joining the firm is G. Daniel Brewer, ex-Ramo-Wooldridge scientist.



Vicrum is now Permitted in Rolls and Buns

This amendment to the Bread Standards, which became effective April 5, 1959, permits the use of Vicrum (Hercules Vital Wheat Gluten) in rolls and buns, enriched rolls and buns, raisin bread, raisin rolls and buns. The amendment limits the use of Vicrum not to exceed up to 4 parts of wheat gluten for each 100 parts by weight of flour.

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COMPANIES

Reichhold Chemicals (Canada), subsidiary of Reichhold Chemicals Inc., is offering 35,000 common shares of stock to the Canadian public. Price: $17.50 each. The offering, says Reichhold, is being made in line with the company's policy of "inviting the national of countries in which it operates to participate in its local operations"

•

Delhi-Taylor Oil Corp. has confirmed its estimates of high-grade potash reserves south of Moab, Utah. Estimates and grade figures were not publicly revealed, though the company reportedly believes the Utah holdings more valuable and exploitable than its large Saskatchewan reserves.

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Plastic Fabrics: Electric Storage Battery Co. (Philadelphia) and Reeves Bros. Inc. (New York) are forming a jointly owned company, ESB-Reeves Corp., to develop porous and microporous materials for wearing apparel and other end-uses. Existing plants of Electric Storage and Reeves — including the latter's Vulcan Rubber Products Division—will be used to manufacture the products.

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Reheis Co., Inc. (Berkeley Heights, N.J.), producer of aluminum salts for cosmetics and pharmaceuticals, has purchased Tech-Chemical Corp. (Stamford, Conn.), in a stock-cash transaction. Tech-Chemical, a producer of liver preparations and other biologicals, will be operated as a wholly owned subsidiary of Reheis.

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American Agricultural Chemical Co. has filed a registration statement with the Securities and Exchange Commission covering 216,093 shares to be offered for public sale. Proceeds from the sale will be used for general corporate purposes. Underwriters are Hayden Stone & Co.

EXPANSION

Aluminum Alkyls: Texas Alkyls Inc., newly formed by Hercules Powder and Stauffer Chemical (*CW, Feb. 14, p. 23*), will build a $1-million plant to manufacture aluminum alkyls near the Houston, Tex., ship channel. Initially, emphasis will be on production of aluminum trialkyls—though the plant will be designed to make a range of aluminum alkyls.

Construction will start this month with completion slated for late this year. Projected capacity: more than 1 million lbs./year.

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Chlorine-Caustic: Industrialist K. C. Irving has revealed plans for a $7-8 million chlorine-caustic plant in the St. John, New Brunswick, area. The plant, expected to be in operation by early '61, will reportedly use by-products from the 40,000 bbls./day Irving Refining Ltd. oil refinery, slated to go onstream early in '60, at the head of Courtenay Bay.

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Tall Oil: Arizona Chemical Co., jointly owned subsidiary of American Cyanamid and International Paper Co., is blueprinting a 40,000-tons/year tall oil refinery in Springhill, La. Construction will start this July with the new unit slated to be in production by mid-'60.

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Polyethylene: Spencer Chemical Co. is blueprinting a second major expansion of its 90-million-lbs./year polyethylene plant in Orange, Tex. Though details were not revealed, a company spokesman said the additional capacity, slated for completion in '60, would require 50 new hourly workers. The plant, expanded from 45 to 90 million lbs./year in '55, now employs about 275 persons.

FOREIGN

Rayon/Britain: Courtaulds Ltd. is negotiating to acquire rayon yarn manufacturer Harbens Ltd. Courtaulds is expected to offer nearly $2 million for the firm. Harbens has incurred new losses in each of its past four fiscal years.

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Dyestuffs/India: The West German firms, Farbenfabriken Bayer A.G. and Farbwerke Hoechst A.G., together with Indian partners, are setting up a new dyestuffs company in India. The combine will build a new plant, 30 miles north of Bombay, designed to turn out 284 tons/year of pigment powders, 600 tons/year of various other pigment types and 2,230 tons/year of binder materials.

Total authorized capital is $4.2 million, of which $2.1 million has been issued. The two German firms have equity interests valued at $351,000 each, the Indian partners have $735,000, and the rest will be offered for public sale.

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Chemicals/Iraq: The Iraqi government has banned all imports of goods made by Britain's Imperial Chemical Industries. ICI confirms the move, enforced, it says, because ICI sells also to Israel. But the company denies reports that its properties in Egypt will be returned to its own management. "As far as we know, we're still going to be Egyptianized," a spokesman told *CW*.

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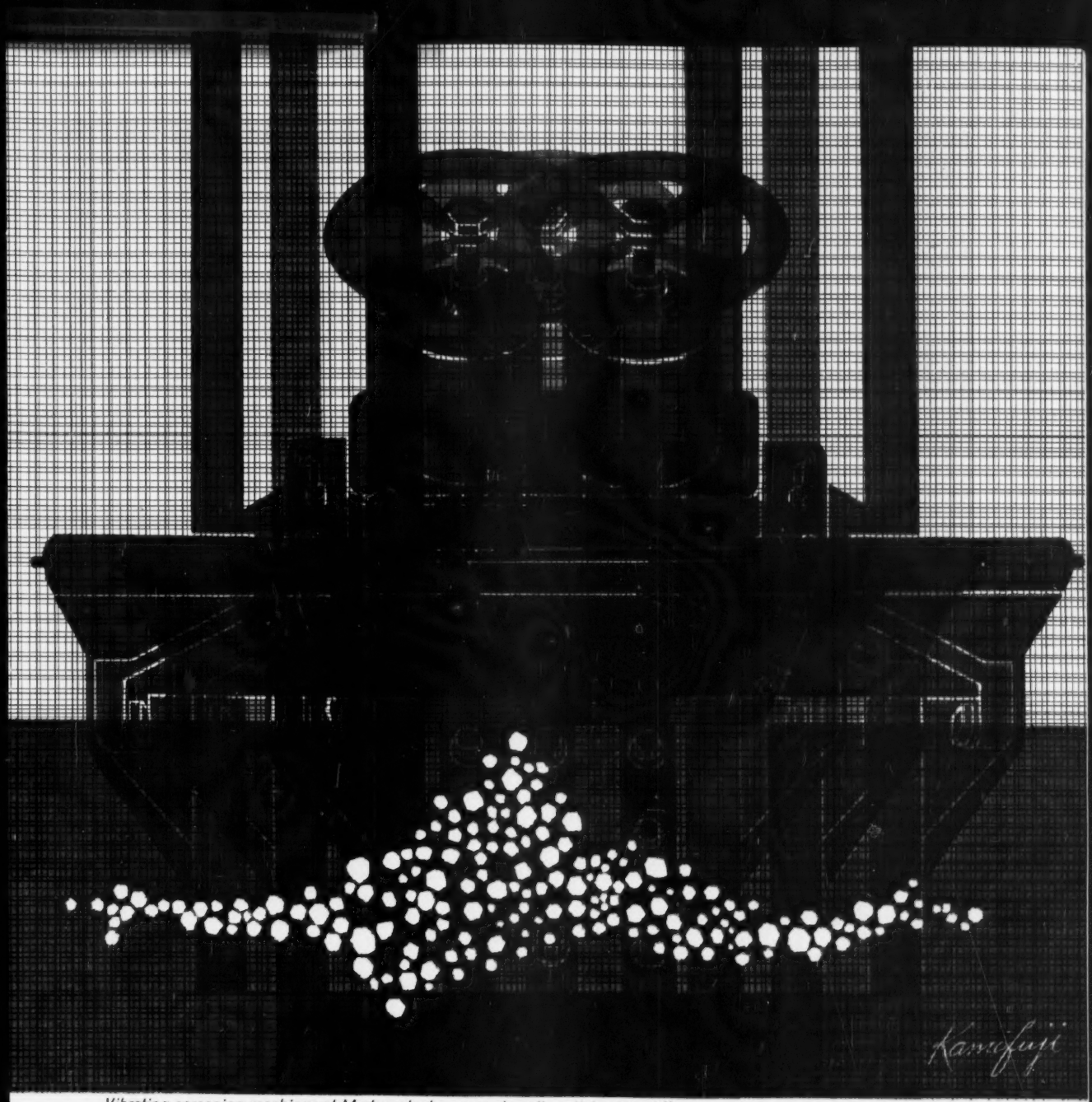
Coal Derivatives/Germany: Reichhold Chemie A. G. (Hamburg, Germany), subsidiary of the U.S. firm Reichhold Chemicals Inc., will build a new plant in the Ruhr area to manufacture semifinished coal derivatives. Onstream date is tentatively set for '61 or '62. The Reichhold subsidiary will step up investments from $480,000 each in '57 and '58, to $950,000 each in '59 and '60.



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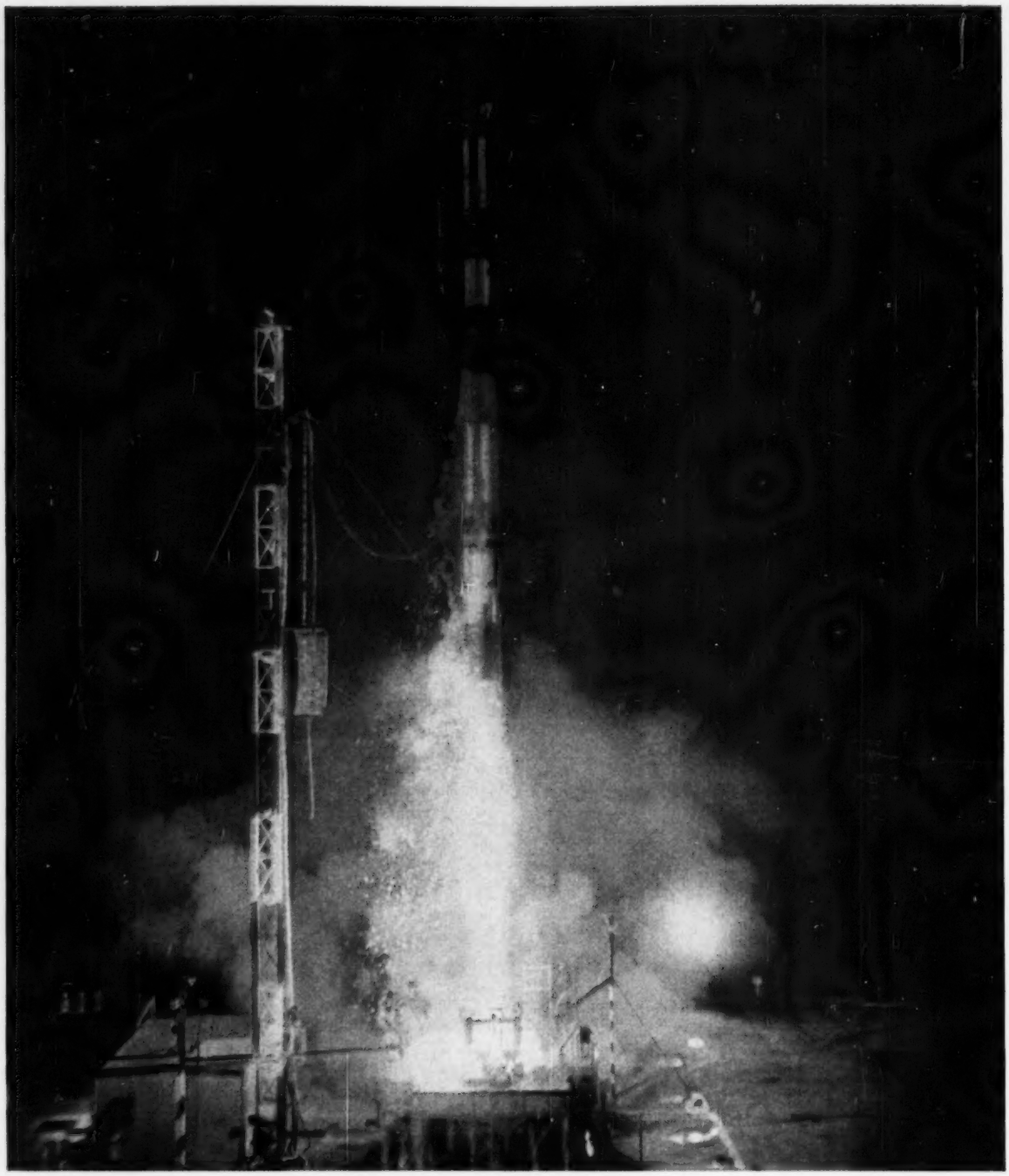

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Washington Newsletter

May 2, 1959
CHEMICAL WEEK

A bill to provide uniform regulation of agricultural chemicals will probably meet little opposition. It would extend the coverage on labeling and permitted tolerances of insecticides, fungicides and rodenticides to a newer group of agricultural chemicals—defoliants, desiccants, plant regulators and nematocides.

This would mean that the latter group, which includes about 4,000 products, would come under the same control as pesticides. (Otherwise, the food additives amendment might apply.) The new measure will have no practical effect on the farmer or consumer but will mean more uniform and less cumbersome regulation for the manufacturer. At present, some chemicals like 2,4-D, which would qualify as both pesticide and plant regulator, could come under double regulation.

The bill, drafted by the National Agricultural Chemicals Assn. and introduced recently by the chairman of the House Agriculture Committee, Rep. Harold D. Cooley (D., N.C.), will have the support of farm organizations and the Food and Drug Administration.

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Site of the first sea water conversion plant may be California or Texas. The newly named site-selection committee is expected to pick the location for the first plant, a $2-million water distillation plant, before the end of May. More than 125 cities are bidding for it.

Each coast—Pacific, Atlantic and Gulf—will get one demonstration plant; two other plants—for desalting brackish water—will go to the Southwest and Northern Plains. In the Far West, California will get top consideration because a number of cities have bid, compared to only one each in Washington and Oregon. And California has put up $40,000 in cooperative research funds. Texas, with a number of interested communities, may put up some money, if its legislature approves. East Coast localities have shown considerably less interest.

The site committee named by Dr. A. L. Miller, director of the Office of Saline Water, is composed of Wilburn C. Schroeder, professor of chemical engineering at University of Maryland and former chief of the wartime Office of Synthetic Fuels; Lewis S. Finch, a civil engineer who's engineering chief of the Indianapolis Water Co. and president of the American Waterworks Assn.; and Sheppard T. Powell of Baltimore, for 35 years a consultant on industrial water problems.

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The oil industry is lagging in air pollution research, charges U.S. Surgeon General Leroy E. Burney. He told the House Appropriations Committee the auto industry is cooperative and aggressive but added: "I cannot say the same for the oil industry."

The industry reports it is spending about $1 million annually, which federal officials consider inadequate. Industry research is concen-

trated on determining what effects chemical adjustments in the fuel have on exhaust components. An increase of $200,000 is being asked for the government's auto exhaust studies. So far, the government has been able to finance two-thirds of all approved applications for research grants in air pollution.

The committee was also told that sewage treatment works are being built at a $400-million/year rate—double that of a few years ago.

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A $945,000 master contract for the Project Scout vehicle, a four-stage, solid-propelled rocket, has gone to Chance-Vought Aircraft Inc. of Dallas. The company, one of 13 bidders, will build the airframe and integrate the four rocket stages.

Scout has been dubbed the "poor man's rocket" because its cost of $500,000 is considerably less than other vehicles with the same payload. It will boost 150-pound satellites into 300-mile orbits, or 100-pound instrument packages to 5,000 miles. Other contracts on the project have already been let to Aerojet-General Corp., Thiokol Chemical, and Hercules Powder Co.

•

A single industry's decision as to whether to raise or not raise prices is receiving politicos' undivided attention. The Administration and the Democrats in Congress are putting the heat on steel companies—and the steel workers union—for a noninflationary settlement that can be then applied across-the-board to other industries.

The steel outlook is for a wage boost that won't mean a price hike—or perhaps only a price increase so small as to be negligible. If this comes off, then producers of other basic raw materials will also be expected to hold the line.

No one expects a price notification bill to get anywhere. But the pressure of political and public opinion is getting hot as the steel wage negotiations open next week.

Republicans are breathing easier as the economy looks better and better. Eisenhower and his aides feel their policy on fighting the recession and fighting inflation have been proved right—which in turn strengthens their will to go all out in their "jawbone attack" on a steel price increase.

Gross national product hit $465 million in the first quarter, breaking through prerecession peaks set in '57. The figure is a 2½% increase from the fourth-quarter of '58—equivalent to an annual rate of 10%. This is a huge upward surge considering that over the past few years the annual increase in output runs to 2% or 3%. Most government economists look for a good year ahead—and some feel that the continued sharp rise in business may be enough to bring a $500 billion GNP by the fourth quarter. Something that was not expected to be reached until '60.

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For a pictorial presentation of Wyandotte technical service at work, please turn page.

*Chemists, Chemical Engineers, Physicists, etc., whose industrial or research experience qualifies them as specialists in their particular field.

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Figuring the economics of Anhydrous vs. 50% Liquid Caustic

. . . an example of Wyandotte technical service at work

1 Anhydrous or liquid? Large users of caustic must make this important decision, which often involves thousands of dollars. The wise user above has invited a Wyandotte technical-service man to visit his plant and make an analysis of his situation.

2 His exhaustive report indicates a switch from anhydrous to 50% liquid, so Wyandotte's engineering facilities swing into action. Equipment is recommended for handling and storage . . . equipment individually tailored to satisfy this user's requirements.

3 This blueprint shows type, size, and location of all equipment the user needs to change over. It is part of a complete report covering all details of construction and operation. Additional consultation is available during the period of construction.

4 This caustic tank car contains a special lining developed and applied by Wyandotte to insure maximum purity of product upon arrival. When the first car arrives at the customer's plant, the technical-service man will be there to facilitate unloading.

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CHEMICALS DOWN AN OIL WELL

These are the chemicals Tidewater Oil used in drilling mud to sink No. 2 Lacassane, a 16,000-ft.-deep gas condensate well in Cameron Parish, Louisiana

Additive	*Amount Used*	*Cost*
Barite	2,446.81 tons	$113,434
Bentonite	76.94 tons	$3,400*
Lime	38,500 lbs.	$732
Quebracho	19,150 lbs.	$3,485
Corn starch	17,250 lbs.	$2,519
Soluble caustic/lignin product	32,750 lbs.	$4,873
Sodium lignosulfonate	15,050 lbs.	$2,586
Carboxymethylcellulose	1,500 lbs.	$1,286
Hemlock bark extract	14,400 lbs.	$2,592
Ferrochrome lignosulfonate	2,800 lbs.	$504
Lost circulation materials *(shredded cellophane flakes, mica, ground walnut hulls, volcanic ash, other fibrous materials)*	92,560 lbs.	$10,966
	Total	$149,954**

* Estimate. ** Total includes tax and drayage.

Drilling Mud Makers Dig Deeper for Profits

This year the U.S. petroleum industry will sink 230 wells to depths of 15,000 feet and more. That's a new record—20% higher than '58's all-time mark of 192 deep wells. Taking more than a casual interest in these figures are makers of drilling muds. As wells go deeper, drilling temperatures and pressures increase, and strata become more of an unknown quantity. Coping with these conditions requires increased use of drilling mud. This year, sales of drilling muds to oil companies should hit $150 million.

Just how much mud it takes to drill a deep well can be gauged from Tidewater Oil's recent expenditure on two gas-condensate wells in the Louisiana swampland. After spending a total of $364,000 on its first well, Lacassane No. 1, Tidewater had to abandon it at 16,000 ft. and drill another, Lacassane No. 2, some 360 feet away. It spent an additional $150,000 for mud (*see table*). Although Tidewater's mud bill for this venture was high—around $100,000 would be average for a Louisiana well—it's not unusual.

Why Use Mud? Primary function of a drilling mud is to remove bit cuttings from the hole. In addition, muds must: (1) comprise a load heavy enough to prevent blowouts of gas or oil; (2) cool and lubricate the drill pipe and bit; (3) seal off the walls of the hole with a thin tough cake; (4) not be absorbed into porous or cavernous formations.

Because each well presents special problems and no one mud works in all applications, there's always a market for new additives. The trend, of course, is toward chemical systems that stand up under high pressures (up to 16,000 psi, or higher) and temperatures (400 F and above) and which aren't affected by contaminants.

The amount and type of mud it takes to drill a well varies with geographical location, well depth and the engineer running the mud program. A 10,000-ft. well may use from 500 to 1,000 tons of mud. Cost of mud, naturally, also varies greatly. Average mud cost: about $45/ton.

Here's a rundown of some of the more important mud additives, the market, and new developments.

Barite: The amount of barite (barium sulfate) used in muds exceeds that of all other additives combined. Barite accounts for nearly one-half the total cost of mud materials. This year about 1.1 million tons—95% of total U.S. barite production—will go into muds. Barite's function: weighting agent to increase density, help prevent blowouts.

Clays: Clays used in muds function as sealers, viscosity promoters and suspension agents. Total market for clays used in muds is over 717,000

tons/year. Bentonite is the principal clay used—to the tune of about 600,000 tons/year. Increased use of oil-in-water emulsions, and greater emphasis on low-solids muds has somewhat reduced the demand for bentonite. Another clay used in muds is attapulgite (Fuller's earth); about 70,000 tons/year is consumed, principally in salt-water muds, where bentonite isn't as effective a thickener and sealing agent. The remainder of the clays are low-yield clays. They are usually drawn from deposits near the well site, consist primarily of calcium montmorillonite mixed with soda ash to increase yield. Market for low-yield clays in muds is estimated at 47,000 tons/year.

Thinners: Plant tannins (mostly quebracho and hemlock extract), lignites, lignosulfonates and phosphates are the most commonly used mud thinners. Function: to reduce viscosity and gelation.

Use of complex phosphates (mostly sodium tetraphosphate) as thinners is decreasing—10 million lbs. of the complex phosphates were used last year in muds but their use will probably diminish greatly in the next five years. Reason: phosphates don't stand up well under high temperatures, can be used only in fresh-water muds.

Use of modified lignosulfonates, on the other hand, is growing fast. Introduced in '57, the modified sulfonates (calcium, sodium and ferrochrome lignosulfonate) are being consumed at the rate of 25 million lbs./year.

The market for quebracho is expected to remain steady. Last year, about 35 million pounds of quebracho went into muds. And about 25,000-30,000 tons of caustic soda were used along with quebracho to reduce acidity. Only other plant tannin used in significant amounts is hemlock extract. Last year, about 10 million lbs. of hemlock bark extract were used and the market should be up 5-8% this year.

Lignites are expected to show moderate gains. About 40 million lbs. of lignites were used last year as mud thinners, another 10-15 million lbs. as emulsifying agents.

Filtration Retarders: Cornstarch, carboxymethylcellulose (CMC), and synthetic polymers are used to improve sealing properties and reduce filtration. A few natural gums, particularly guar gum, are used, too, but in much smaller quantities. Over 50 million lbs. of cornstarch, 15 million lbs. of CMC, 2-3 million lbs. of synthetic polymers went into muds in '58.

The market for cornstarch isn't growing much. Cornstarch doesn't stand up under high temperatures; it is subject to bacterial degradation above 250 F. But use of CMC is spreading, mainly because it's stable up to 350 F. Du Pont, for example, will bring out a new line of CMC-based products for drilling muds which won't contain any salts. These are designed for use where salt contamination is a problem.

Synthetic polymers, such as American Cyanamid's Cypan—a hydrolyzed polyacrylonitrile—are used primarily in high-temperature lines. With bottom-hole temperatures of 350-400 F, mud comes up the return lines at about 200 F, with high evaporation loss and thickening. Polymers control thickness and stand up well under high temperatures. Although they have been in the mud market for four years, they didn't begin to catch on until '57, after much upgrading.

Surfactants: One of the biggest developments in recent years is the advent of nonionic surfactants. They're used both in low-solids, oil-emulsion muds to maintain low viscosity and low water loss, and in high-weight muds to control the rheological (solids-carrying capacity) properties. Biggest advantage of using surfactants is heat-stability. From 2-3 million lbs. of nonionics were used in '58. Widely used surfactants are General Aniline and Film's (Antara Division) DMS and DME and Atlas Powder Co.'s Atlasol and Afrox.

Preservatives: Mud market for starch preservatives is about 4 million lbs./year. Great bulk (2.5 million lbs.) of this amount is para formaldehyde. The remaining 1.5 million lbs. is mostly sodium pentachlorophenate (Dowacide G), phenol and cresol.

Antifoamers: Bulk of the antifoam mud market is probably still alkyl aryl sulfonate, but sulfonated castor oil is beginning to take over. Market for foam breakers in drilling muds is about 600,000 lbs./year.

Foaming Agents: While foaming agents are used widely in one application—air drilling—over-all use is limited. Although many air-drilling equipment problems still have to be overcome, air drilling is already a significant technique. Currently, there are about 100 wells being drilled with air or gas. Foam is used in air drilling to remove water and cuttings from the hole. Market for foaming agents used in air drilling is 200,000 lbs./year. Common foaming agents are anionic and nonionic surfactants.

Other common specialty drilling mud additives include flocculants, corrosion inhibitors, extreme-pressure additives and emulsifying agents. Flocculants are used to separate the drilled solids at the surface, generally when low-solids muds are used. Such flocculants eliminate the need for water-thinning in areas where water is scarce. The market for flocculants probably doesn't exceed 100,000 lbs./year. Flocculants used in greatest volume are Dow's Separan—an acrylamide polymer—and guar gum.

The use of extreme-pressure additives (so-called E. P. additives) is increasing. Biggest development during the past few years has been a Gulf Oil-developed sulfurized derivative of tall oil. Gulf says the new additive can cut drilling time 12.5-25% by increasing bit life 2-5 times. The E. P. additive used most extensively now, however, is still graphite. Market for graphite in muds is 2.4 million lbs./year. Potential market for Gulf's E. P. item, say drilling spokesmen, is 2-3 million lbs. year.

Sodium chromate and sodium bichromate account for the bulk of the 400,000 lbs. of corrosion inhibitors used yearly in muds.

Use of emulsion muds—any water-base mud containing oil as an emulsifying agent—are on the upswing. Most commonly used specific emulsifying agents are sodium salts of tall oil, sulfonated hydrocarbons. Nonionic surfactants are used to a lesser extent. Market for specific emulsifiers is 2-3 million lbs./year. In many cases, lignites, CMC, tannins, cornstarch, other common drilling mud additives, also serve as the emulsifier.

Other Items: There are many more materials used in muds. For example, about $12-$15 million/year is spent on "lost circulation" materials. These include everything from ground walnut hulls and chopped leather to mica and plastic scrap.

Chemicals to counteract contamination from shale, salt, cement, anhydrite (calcium sulfate), are also used in large volumes. Shale-control

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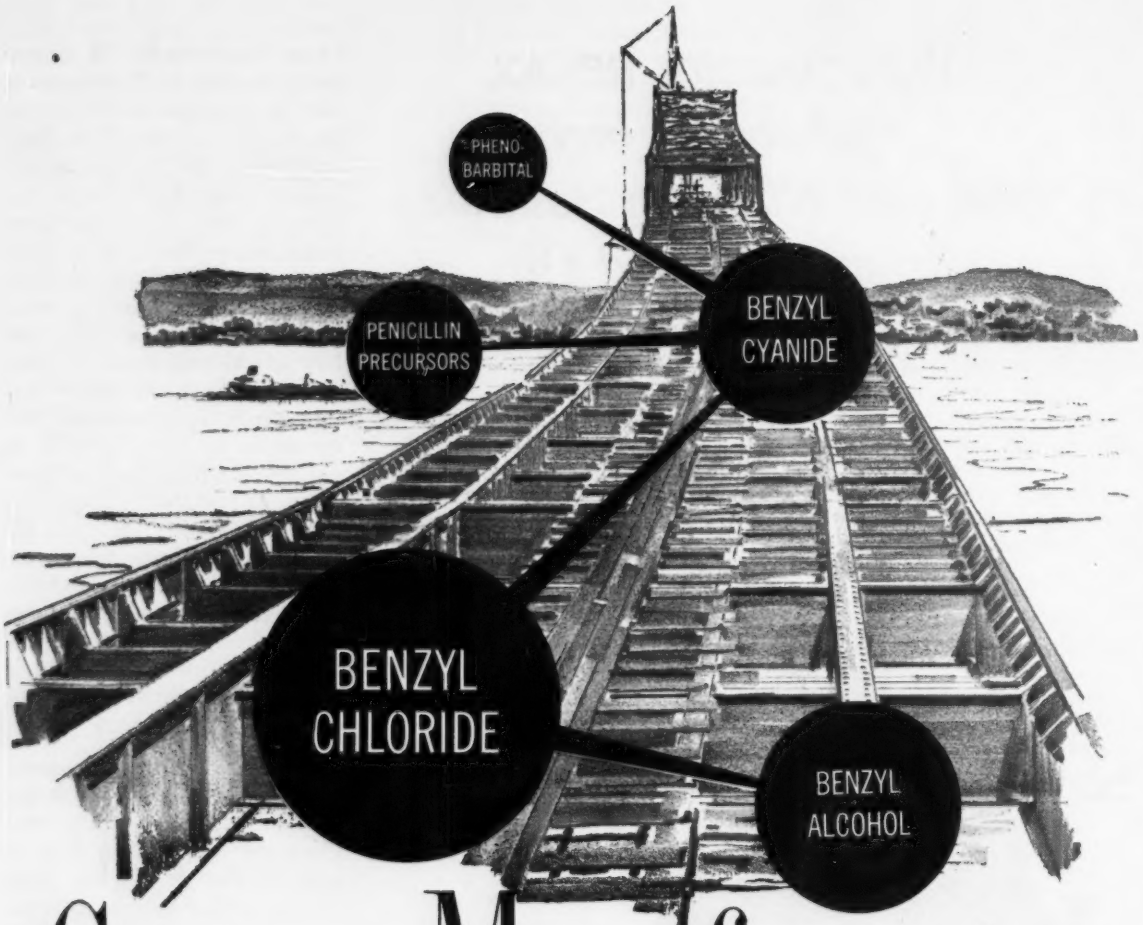

Custom Manufacturing

TYPICAL REACTIONS

Alkylation	Diazo Acetic Ester Reaction	Introduction of the CN Group
Amination	Esterification	Malonic Ester Synthesis
Bromination	Ethoxylation	Nitrosation
Chlorination	Grignard Reaction	Oxidation
Chlormethylation	Hydrolysis	Saponification
Condensation	Hydrochlorination	Sodium Reduction

BPC

Benzol PRODUCTS COMPANY

Manufacturers of Fine Chemicals

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NEWARK 5, NEW JERSEY

See Chemical Materials Catalogue listing on page 122

muds are moving up fast now. These muds usually consist of one part calcium chloride, two parts calcium hydroxide and three parts lignosulfonates. Large quantities of calcium chloride (about 1,000 tons/year) and gypsum (about 1,000 tons/year) are also used to stabilize shale.

Mud Makers: Big three in the mud field are Baroid, division of National Lead Co.; Magnet Cove Barium Corp., Magcobar Division; and Milwhite Mud Sales Co., division of Mississippi River Fuel Corp., all located in Houston. These companies have about 85% of the entire mud business. Other big mud companies are: Mud Control Labs., Inc. (Oklahoma City), and Macco Corp. (Paramount, Calif.). Mud Control and Macco probably have 2% of the total mud business. In addition to these, there are 150-200 smaller, local companies that split up the remaining 13%.

By far the bulk (some 90%) of mud chemicals move through such companies. Oil companies buy very few mud items directly from chemical makers. One big reason: oil companies don't want to bother with inventory problems.

Prices on various additives vary greatly. The complex price arrangement usually depends upon what and how much service goes along with the additive; as many as 15 different prices schedules on one item aren't at all uncommon. Price of corn starch, for example, may vary from 5¢ to 20¢/lb., price of CMC from 50¢ to $.1.10/lb., depending upon the particular company and the service rendered.

Freight changes can frequently change materially the cost of an additive. Wyoming bentonite, for example, may sell for $13/ton in Wyoming, $36/ton in Louisiana. By the time it gets to South America, it may cost $100/ton.

At least 80% of the additives are sold under the mud companies' tradenames. When the ingredients are commonly known in the oil field, such as barite, or bentonite, they're usually sold by chemical name. A few items, such as Du Pont's CMC, may be sold under the chemical maker's tradename, but usual practice is to repackage the item under the mud companies' own name or tradename.

Missing Distributor: A noticeable trend among mud companies is to put in their own retail stock points. The capital needed for large warehouses with necessary servicing equipment is more than small distributors can afford, so they are rapidly passing out of the picture. Baroid's products are now 100% company-distributed; Magcobar sells about 80% through its own outlets; Milwhite is also moving in the direction of owning its own distribution facilities.

Over 95% of mud used is mixed at the well site. By and large, oil companies award a mud contract for the entire requirements of each well.

Who Buys? Just who the buyer is, varies geographically, by the nature of the drilling contract, and the depth of the well. Over 90% of the wells are drilled by contractors, but that doesn't necessarily mean that the drilling contractor has control over mud purchase. On the Gulf Coast, mud companies usually sell to well operators, but in other parts of the country, the contractors buy the bulk of the materials. However, many contracts on small wells have a $500 mud clause: The contractor pays up to $500 for mud; the operating company pays for the rest. Mud salesmen have from one to a dozen different people in a company to sell, anyone of whom can veto the sale.

Mud Areas: Best market areas are, obviously, the most active drilling areas. More money is spent for drilling mud in Southern Louisiana than in the rest of the U.S. combined. Over 70% of the money spent for drilling muds goes down wells in the Gulf Coast region—especially Texas and Louisiana. Over 80% of the total mud market is in 20% of the wells.

Mud for Rent: During recent years, there's been a trend toward reclaiming mud. On the Gulf Coast, principally, barite is reclaimed by centrifuging. Recently a number of liquid mud companies have started operating. These companies will go out and buy used mud and sell it to anyone who wants to buy it. In some areas, certain specialty drilling muds are rented. As mud costs go higher, there's likely to be more and more mud reclaimed and reused.

Mud Outlook Clear: Deeper wells, coupled with predictions for higher U.S. drilling activity, are sure to mean a steadily growing market for muds. Not only will more, deeper wells be drilled this year, but over-all drilling

SPECIALTIES

activity should increase, too. The oil industry predicts 52,746 new wells in '59—a 7.4% gain over the 49,111 wells completed last year.

Progress in Paint

Three companies figure in the recent news of paints and coatings:

• Polymer Process Industries (Reading, Pa.) has obtained the U.S. license for a method of dry painting invented in Germany. The process uses heat and a flow of air instead of volatile solvent to spread the coating. The object to be coated is heated, then dipped into a container of powdered paint (an epoxy type) through which air is blown to keep coating particles in a sort of dusty "cloud." The coating particles stick to the hot object, whose temperature determines the thickness of the coating.

• Spencer Kellogg and Sons (Buffalo) has a new technique for the production of polyurethane paints. It consists of pretreating pigment with a small quantity of tolylene diisocyanate in a solvent slurry grind using a closed dispersion system. The polyurethane prepolymer is then introduced and the system milled in a conventional way.

• Acoustex Chemical Corp. (500 Fifth Ave., New York) is pushing a line of sound-absorbing paints called Acoustex. The paint, a speckled material containing an alkyd-latex base, comes in 11 colors, costs $8.70/-gallon (enough to cover 150 sq. ft.). A single coat is supposed to be sufficient to provide the sound-absorbing qualities claimed.

Canadian Score

Canadian companies that manufacture pest-control chemicals are showing a net profit of 3.3¢/sales dollar, according to a recent survey by the Canadian Agricultural Chemical Assn. The survey, which went to about one-quarter of the country's pesticide manufacturers, showed that these companies were enjoying dollar sales three times that of '47. Then, their sales were $7 million; today the figure is around $22 million yearly. Predictions are for sales to climb to almost $23 million this year, go further, to around $28 million by '61. Included in the category of "manufacture of pest-control chemicals" are makers of agricultural dusts and sprays, livestock treatments, herbicides, household and industrial insecticides, rodenticides and sundry chemicals.

PRODUCTS

Sticker: Allied Chemicals' General Chemicals Division has a new polyethylene additive for pesticide sprays. Tradenamed Plyac, it is said to give agricultural pesticide sprays greater spreading and sticking properties.

Plyac, an emulsifiable form of polyethylene, can be used with insecticides, fungicides, herbicides and most other pest control sprays. Advantages of the new product, says Allied: It improves initial and residual effectiveness of sprays; reduces the number of applications required; is compatible with a wide variety of spray mixtures. Two to four oz./gal. of spray are usually enough to do the job.

•

Rubber Paste: Devcon Corp. (Danvers, Mass.) has come up with a rubber "putty" for home repair work. The new product can be used in caulking, insulating, sealing and waterproofing. It bonds to rubber, metal, wood, glass, plastic, porcelain and fabrics. Retail price: 98¢.

•

Package Deal: The use of synthetic resin adhesives in packaging this year will hit close to 165 million pounds (valued at $40 million). That's the prediction of W. H. Bromley, director of marketing for Shawinigan Resins (Springfield, Mass.). That figure of 165 million indicates a big climb for the synthetics; in '50, only 53 million lbs. of synthetic resins were used in packaging. Of the total of 165 million lbs. of adhesive based on synthetic resin, about 115 million lbs. (70%) will be based on polyvinyl acetate, according to Bromley.

•

Platinum for Protection: Engelhard Industries (Newark, N.J.) has developed an electrical anticorrosion system for boats that uses platinum-surfaced anodes. The units, called Capac, can be used on small wooden-hulled craft (to protect propellers, rudders, shafts, etc.) or on commercial ships. The small units retail at $89.95.

•

Synthetic Essential Oil: Fritzsche

6 GOOD REASONS WHY ALLIED IS YOUR BEST SOURCE FOR AQUA AMMONIA

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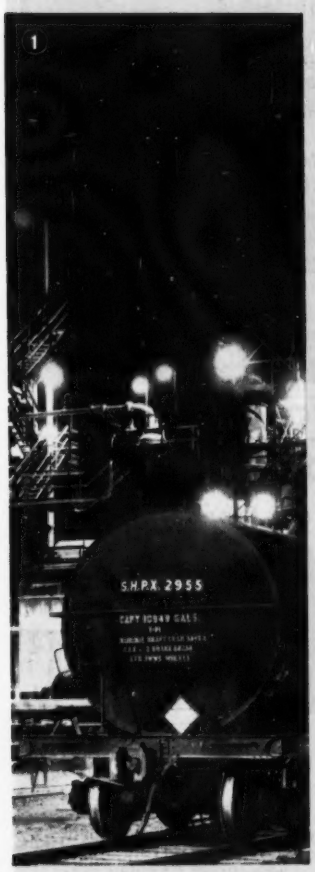
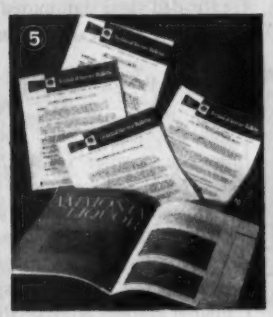
For specifications and local offices, see our insert in Chemical Materials Catalog, pages 435-442 and in Chemical Week Buyers Guide, pages 35-42.





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SPECIALTIES

Brothers (New York) is offering F.B. Reconstituted Oil Bergamot. It claims this is one of the first essential oils to be made commercially by chemical synthesis. The company claims the synthesized material shows better solubility in some propellents than true oil of bergamot, shows no darkening when used in white soaps. Price tag: $7/lb.

•

Antistatic Fiber Lube: Emery Industries is now offering commercial quantities of Twitchell 7440, an antistatic water-soluble fiber lubricant. It is said to effectively control static on all common synthetic fibers including nylon, polyesters and acrylics.

•

Self-to-Self Sticker: Angier Adhesives (Cambridge, Mass.) has a natural latex rubber adhesive, called Alt 2-56-2, which sticks only to itself. It's formulated to stay tacky for six months, once applied to a surface. It sells for $3.50/gal.

•

Antacid Tablets: Winthrop Labs (New York) has introduced a new antacid tablet. Each tablet contains 320 mg. aluminum hydroxide gel with 75 mg. magnesium hydroxide. The tradename is Cremalin Antacid Tablets; and these are supplied in bottles of 50, 100, 200 and 1,000 tablets.

•

Cork and Silicone Combination: Armstrong Cork Co. (Lancaster, Pa.) has combined cork and silicone rubber in a sealing material tradenamed LC-800. The material can be made in ribbon and lathe-cut rings, both extruded and laminated, as well as mat sheets and die-cut parts.

•

Pool Powder in Poly: Living Products (200 Fifth Ave., New York) is now offering its Puro-Pool water purification powder for bathing pools in a 16-oz. polyethylene bottle (for $1.98) as well as in a 5-lb. can (at $4.95).

•

Refillable Aerosol Dispenser: A refillable aerosol cologne dispenser, consisting of a metal outer case and a replaceable inner glass bottle for the fragrance and propellent, has been introduced by Risdon Manufacturing Co. (Naugatuck, Conn.) The dispenser is called the Vaniti-Mist, comes in 1- and 2-oz. sizes.

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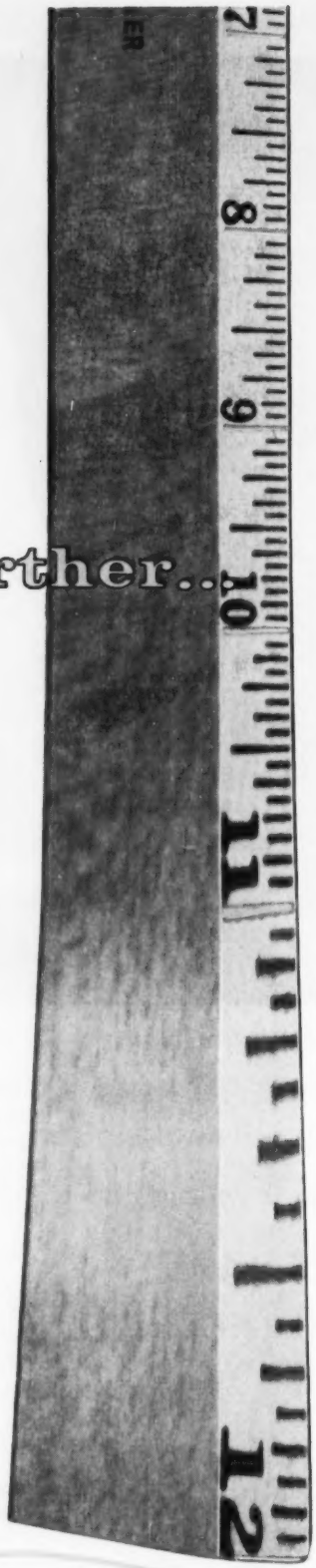

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Casting urethane foam in unsealed mold is obsolescent technique resulting in materials waste.

Dimers Angle for More Urethane Jobs

Urethane foam producers are taking a new look at dimer polyesters this week as the result of recent research which shows the compounds can cut molding costs and impart novel physical properties.

Despite the great emphasis today on "one-shot" polyether foams, a lot of money is also being bet on the bright growth prospects of dimer-based foams.

One reason is the trend toward closed molding. Urethane foam produced in slabs must be cut into various shapes required by customers—and this usually result in some waste. In closed molding, the foam is made in the precise shape required (e.g., an auto crash pad), eliminating materials waste. In the experience of some applications researchers, such as Robert Nelb, manager of polyester development at U.S. Rubber's Naugatuck Chemical Division (Naugatuck, Conn.), dimer polyester urethanes handle better in the closed system, give more uniform cell structure and cause fewer rejects because of flaws.

The dimers also yield foam having low modulus (greater softness) at high density, and good tensile strength. And the dimer prepolymer may be loaded with low-cost fillers (around 2½¢/lb.) such as kaolin, to increase the modulus and reduce foam costs. This means that a wide range of foam properties can be had at a cost comparable with or lower than that of competitive materials.

Dimer acid is a generic term applied to a polyfunctional acid obtained by polymerization of linoleic and oleic acid. Emery Industries, Inc. (Cincinnati) holds patents on the process and supplies commercial quantities of its 3065-S dimer acid at 26½¢/lb. in tank-car quantities.

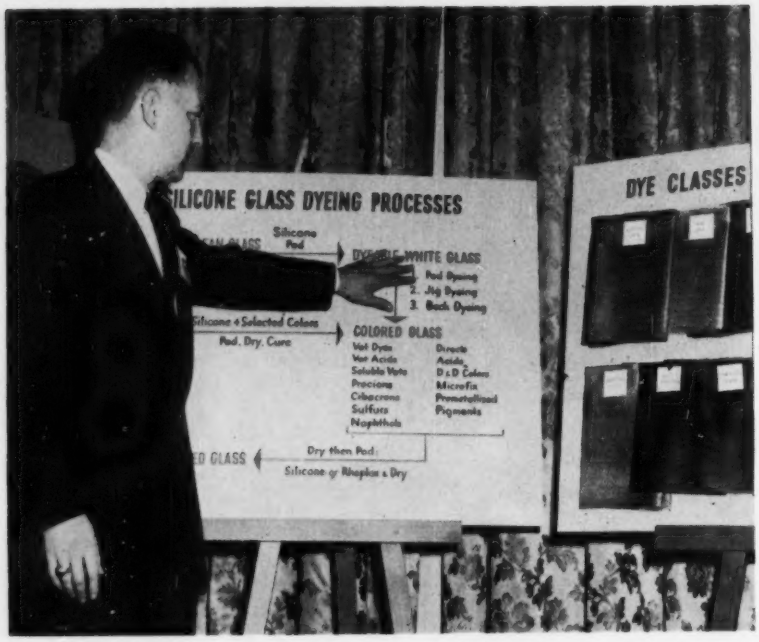
Emery's customers, including Pittsburgh Plate Glass, Witco Chemical Co. and U.S. Rubber Co. react the dimer acid with ethylene glycol or other glycols to obtain the dimer acid polyester which is then supplied to urethane foam producers.

Walter Meinert, director of Emery's development and service department, explains that interest in the dimer acids stems from the large quantities available and their unusual properties. He feels they make possible "lower densities of flexible foam with more satisfactory properties than any other material we know of."

Witco expects dimer polyesters to grow in use, primarily at the expense of adipate polyester over which it has a definite cost advantage. At best, dimers are only "comparable" in cost to polyethers, says Witco, and that's on the basis of cost per cu. ft. of foam (again, because dimer-based foams result in lower operating costs and fewer finished-product rejections). Witco has begun investigation of rigid urethane foams using dimer polyester and has built a pilot plant.

The dimer foams do have some disadvantages, Nelb points out. They won't stretch as far as the polyether foams, for example, which is a disadvantage in furniture upholstering.

About 1-2 million lbs. of dimer polyester urethanes are already being produced, much of this for the multi-million-lb. auto urethane market (crash pads, sun visors, gasketing, etc.). Chances are that research will help raise this market in the relatively near future.



Carbide's Lynch: Deeper hues in glass fabrics via new silicone.

New Help For Glass Dyes

Last week's development by the Silicones Division of Union Carbide Corp. of an improved method of dyeing glass textiles (Technology Newsletter, April 25, p. 66) is generating interest among both textile and dye researchers.

Called the Silrama process, it permits a much greater variety of dyes and pigments to be applied to glass, and thereby adds a new market for the colorants industry. The process is, reportedly, the first resulting in deep-hued colors in glass, may spell competition for other synthetic fabrics which now hold the major portion of the decorative textile market.

The first Carbide licensee, J. P. Stevens and Co., Inc., has readied production lines for the process, will stage initial showings for designers this week, aiming at the fall market. The firm plans limited production this summer.

Silicone Key: The process involves the addition of a silicone to a dye or pigment (to form a physical mixture), which is then applied by any of the commercially available dyeing methods, depending upon the characteristic of the colorant. Carbide is tight-lipped about which silicone it uses, but it's known to have resulted from extended research toward the preparation of triazine derivatives of aminoalkylsilicones.

According to Maurice Lynch, Carbide's manager of the Silrama process, "The organo-functional silicone (a water-soluble liquid) has an affinity for glass, forms what is apparently a chemical bond between the colorant and the glass fibers."

Donald Gagliardi, president of Gagliardi Research Corp. (East Greenwich, R.I.), consultants on Silrama, told *CW* his firm was successful in applying such water-soluble dyes as vats, vat esters, vat acids, acid wools, sulfurs, directs, naphthols, direct and developed dyes, premetallized acids and neutrals, new reactive dyes and water-dispersible pigments to glass, using Carbide's silicone.

Until now, glass-fabric dyeing has been limited to the use of selected pigments applied by using either a Hycar synthetic latex or polyvinyl alcohol resin as a carrier for the pigment. (For printing glass, alkyd or epoxy resins are used as carriers.)

Competition? Lynch feels there is no current competition with Silrama. He confidently claims that it offers colors glass fibers have never had before, cites the fact that fabrics treated with the silicone meet the standards set by Owens-Corning Fiberglas Corp. for the industry. Among the qualities: crease resistance and drape; washability in soaps or detergents without suffering loss in color intensity; lightfastness (some colors have stood up over 200 hours in fadeometer tests); and solvent resistance.

But Carbide's new process isn't the only glass-dyeing aid in the field. Others include:

Hess, Goldsmith Inc.'s (a division of Burlington Industries Inc., New York) Dy-Cor process. According to William Colton, vice-president, "It's a method of achieving multicolored effects on glass fabrics." Its additive allows production of two depths (tones) of one color, or two different colors. He adds that his firm is interested in license arrangements with Carbide, has been doing work along the same lines for some time.

Dow-Corning Corp. (Midland, Mich.) has an amino-functional silane (Z-6020) containing primary and secondary amine groups which will combine with dyes and resins. It is applied to cloth as a dip, prior to dyeing, acts as a binder for the dye. Price: $5.85/lb.

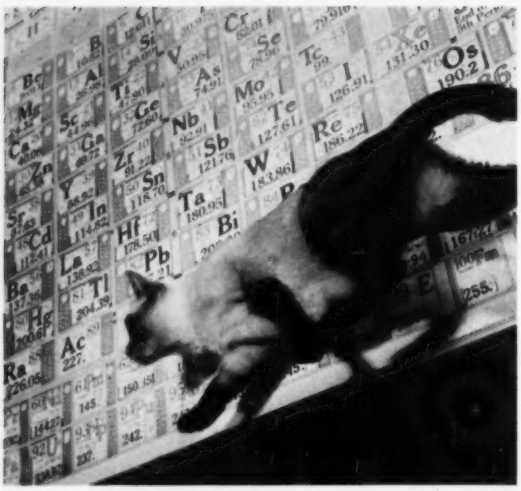
A spokesman for United Merchants Industrial Fabrics, a division of United Merchants Mfg. Inc. (New York), a leading glass-textile processor, notes that his firm is "taking a go-slow attitude about Silrama. This doesn't mean that we are not enthusiastic about it, but rather that there has been little call for deep-hued glass textiles in the past. We're not sure how well they will go over now that they will be available. It's likely that we will ask for a license from Carbide—but a policy decision hasn't been made."

Owens-Corning Fiberglas Corp.'s (Toledo, Ohio) Edward Cobb, administrator of the firm's Ashton R.I. textile research lab, says that O-C is researching other dyeing aids taking an entirely different approach. His firm, too, is interested in a possible licensing arrangement with Carbide for the use of Silrama.

The new, deeper-colored glass fabrics will likely trigger new research by dye, textile and glass makers — to counter or complement Carbide's new silicone.

ARGUS HAS THE ANSWERS

Argus Chemical Corporation is a pioneer in the specialized manufacture of stabilizers and plasticizers for the vinyl processing industry. Intensive, continual research and product improvement over the years are responsible for the position of leadership which Argus occupies in the field today. Argus Mark Stabilizers and Drapex Plasticizers are industry standards.



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- heat sealing
- printability
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- retention of physical properties
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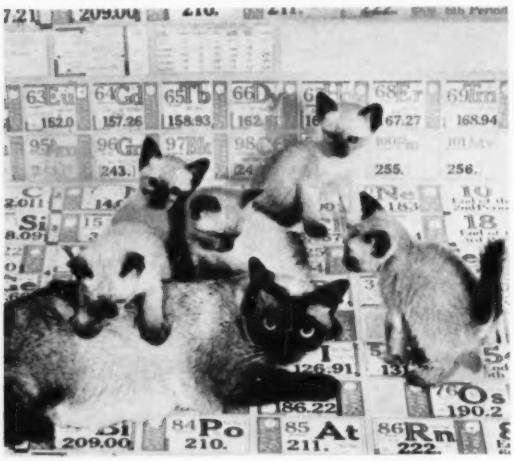
- resistance to soap and water extraction
- viscosity stability
- low viscosity
- freedom from copper staining
- resistance to staining
- good impact strength
- good weathering

Tell us your need. Often it can be solved by one of our line products or a specific combination of them. In some cases basic, original research is needed. And technical service from Argus is equivalent to having your own vinyl research laboratory right on the spot.

MARK STABILIZERS



Quality control makes a difference. Every batch of Argus products has the same, pure-bred quality! That's one of the advantages of specifying Argus Mark stabilizers.

It takes careful manufacturing and continuous testing by Argus research to meet this high standard. Most vinyl stabilizers are complex mixtures, so that merely checking physical specifications such as specific gravity and refractive index are not necessarily indicative of standard performance. To insure the consistency and quality of all Argus materials, we make up a sample vinyl formulation for every stabilizer batch and test it for heat stabilizing action.

This constant testing under conditions of actual use is the only way you can be sure of getting top quality stabilizers. It is one of the reasons for the high position the line of Mark stabilizers (see below) holds in the industry.

MARK M — barium-cadmium complex with high heat and light stabilizing efficiency.

MARK PL — zinc complex that exhibits a synergistic action on stability when used in conjunction with other Mark stabilizers.

Periodic Chart of the Atoms, Copyright W. M. Welch Mfg. Company, Chicago

MARK XI – coprecipitated barium-cadmium laurate with excellent heat and light stabilizing action.

MARK TT – barium-cadmium soap recommended for stabilization of high phosphate formulations in combination with Mark M.

MARK WS – barium-cadmium complex specifically designed for use in the extrusion or calendering of rigid polyvinyl chloride, and other severe applications.

MARK C – most efficient chelating material developed. Used in conjunction with barium-cadmium systems to improve heat and light stability.

MARK XX – antioxidant or chelating agent used to increase the efficiency of a saturated metallic soap or a metallic salt.

MARK XV – cadmium containing chelating agent which markedly improves the heat and light stabilizing action of lead, barium, calcium and strontium stabilizers.

MARK E – a strontium-zinc laurate with a low degree of toxicity for use where complete freedom from sulphide staining is a necessity.

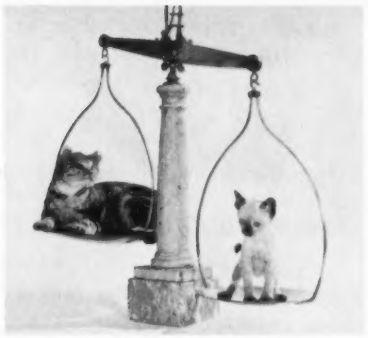
MARK GS – zinc containing complex organic liquid stabilizer for plastisols to meet the requirements of outstanding air release and "bubble break" characteristics and complete freedom from mold plate-out.

MARK X & MARK A – alkyl tin mercaptides specifically recommended for the stabilization of crystal-clear unplasticized compounds.

MARK 225 & MARK HH – vinyl stabilizers for floor tile formulations incorporating iron containing asbestos.

MARK KCB – barium-cadmium-zinc heat and light stabilizer especially effective for plastisols and organisols and all resins which tolerate zinc stabilizers.

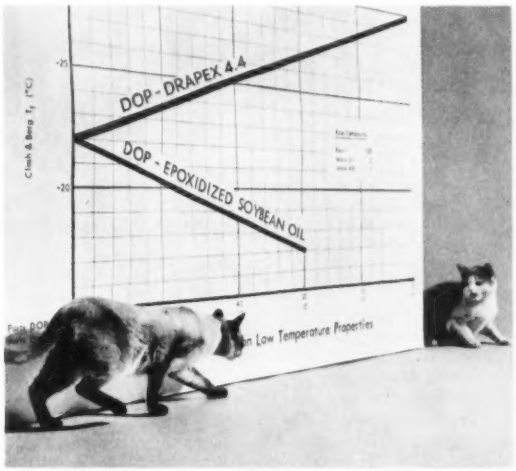
. . . AND NOW MARK LL



Less gives you more. Powerful, highly efficient, Mark LL gives you more heat and light stability, and better maintenance of the true tones of sensitive organic pigments, than any other vinyl stabilizer on the market.

● Technical Bulletin #1 gives detailed information on Mark stabilizers. Write for your copy and/or samples.

DRAPEX PLASTICIZERS



Pure-bred epoxy . . . at an alley-cat price. Argus Drapex 4.4 is the blue-ribbon champion in epoxy plasticizers. The lower specific gravity of Drapex 4.4 reduces volume costs by 6 percent. You can *economize* by replacing ordinary epoxy plasticizers with Drapex 4.4 in your vinyl formulation and achieve, in addition:

- low temperature flexibilty
- low volatility

• improved heat and light stability
• low viscosity and viscosity stability in plastisols
• ease of handling
(due to low viscosity and low freezing point)
• good weatherability

● Argus Drapex plasticizers include:

DRAPEX 3.2 – octyl epoxy stearate having all the advantages of Drapex 4.4 and suggested for those applications which require the best possible low temperature flexibility.

DRAPEX 4.4 – octyl epoxy stearate having a higher epoxy value than Drapex 3.2 with resultant superior heat stabilizing action.

DRAPEX 7.7 – high solvating primary plasticizer with polymeric properties. Recommended where resistance to staining by such materials as asphalt, shoe polish, grease, mustard, ink, lipstick, etc., is an important consideration.

● Technical Bulletin #3 gives detailed information on Drapex plasticizers. Write for your copy and/or samples.

ARGUS RESEARCH

Curiosity that's bred in the bone is the hidden ingredient in every Argus product. It enables Argus research to keep turning out better and better vinyl plasticizers and stabilizers at lower and lower cost.

Many of Argus' superior products have been developed, or improved, in the course of finding answers to specific technical problems posed by customers. The reason: every member of the Argus research staff is a recognized authority in the vinyl field.

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If you want the right answers, ask Argus.
We'll find them for you in our regular line
of Mark Stabilizers and Drapex Plasticizers
– or in basic, original research on your problem
by our Technical Service Staff.

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European Affiliates: SA Argus Chemical NV; 33, Rue d'Anderlecht, Drogenbos, Belgium – Lankro Chemicals, Ltd.; Eccles, Manchester, England

LITHO IN U.S.A.

PRODUCTS

Biochemical Debut: Schwarz Laboratories, Inc. (Mount Vernon, N.Y.) now offers crystalline DL-glyceraldehyde-3-phosphate diethylacetal for biochemical research. It's a key chemical in carbohydrate metabolism, respiration, fermentation, energy transfer and photosynthesis.

•

Starch Hopeful: Abbott Laboratories (North Chicago, Ill.) has started limited production of dialdehyde starch. The process is one patented by the government, developed at the Northern Utilization Research Branch of the U.S. Dept. of Agriculture (Peoria, Ill.). Dialdehyde starch is a successful binding agent in leaf tobacco, may also be suitable as a commercial leather tanning agent. It's under study as a polymer former, and in coatings, adhesives, etc.

•

Fermentation Aids: Six yeast autolysate products said to reduce industrial fermentation costs are now available from Vico Products Co. (415 W. Scott St., Chicago 10).

•

Filament First: Strawn, a new flat, strawlike monofilament rayon yarn has been developed by Industrial Rayon Corp. (Cleveland). It's for use in automobile upholstery and drapery fabrics.

•

PVC Entry: Abbey Plastics Corp. (Hudson, Mass.) is out with an electrically conductive polyvinyl chloride compound, Abbey 100, that is suggested for such uses as the replacement of copper braid in communications wire. It may also be used in aircraft de-icer systems, antistatic devices, and the like.

•

Price Cuts: General Mills' Central Research Laboratories (Minneapolis) has reduced the prices of its γ-aminobutyric acid, L-glutamic acid γ-hydrazide, L-glutamine, and L-ornithine monohydrochloride.

EXPANSION

• Electric Storage Battery Co. (Philadelphia, Pa.) has purchased American Machine & Foundry Co.'s battery laboratory at Raleigh, N.C.

• Baird-Atomic, Inc. (Cambridge, Mass.) has opened a new spectrochemical applications laboratory for

RESEARCH

research and assistance to customers on specialized analytical problems.

• The Norton Co. plans a $750,000 expansion project at its Chippawa, Ont., research department. New construction includes a two-story addition to the present laboratory.

• Bell Telephone Laboratories will build a $20-million laboratory at Holmdel, N.J. Occupancy is scheduled for late '61.

APPARATUS

Equipment Outbreak: Research Specialties Co. (Richmond, Calif.) is out with these new laboratory aids:

• Model 2340 automatic tube centrifuge. It is described as the first automatic unit sold for routine laboratory use. Price: $6,250.

• Model 2305 automatic bio-analyzer—new system for continuous automatic chemical analysis, said to offer unusual flexibility useful in research. Price: $7,400.

• New modular units for gas chromatography, said to permit close control of the wide choice of conditions permitted at each step of the process—injection, separation, detection, and recording. Prices vary.

LITERATURE

• The "English-Spanish Comprehensive Technical Dictionary — Section II" was published this month by McGraw-Hill Publishing Co. It includes over 400,000 of the latest technical terms used in all fields, translates them from English to Spanish. The volume forms an updating supplement to the 1944 edition, includes complete definitions, synonym and antonym lists. Cost: $35.

• A bibliography on the intensity of infrared absorption bands has been published as a technical memorandum by the Australian Defence Standards Laboratories of Maribyrnong, Victoria, Australia.

• The "Russian Patent Bulletin," listing the latest technical developments in the U.S.S.R. in English translation, is available from Research Information Service, 40 E. 23rd St., New York. The monthly lists every patent issued in Russia each month, giving the title and complete text of the chief claim. Fields covered include: organic and inorganic chemistry, rubber, plastics, fuels.

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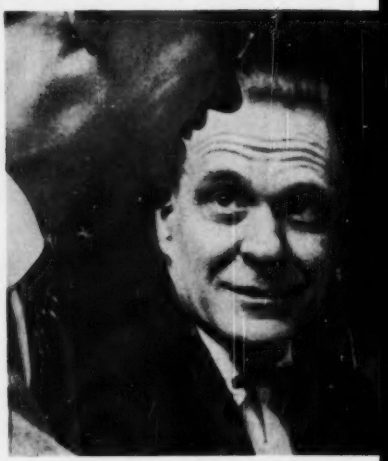


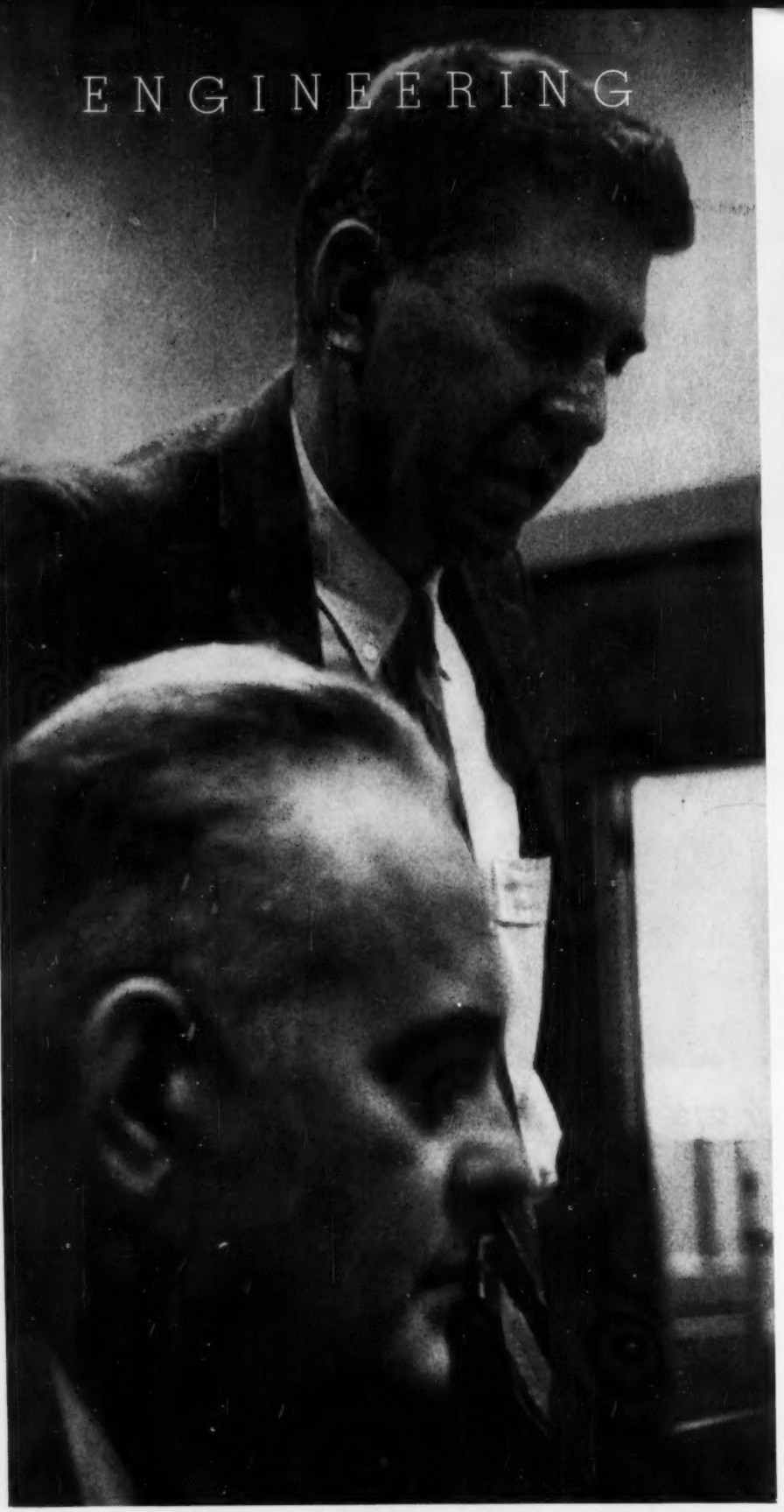
MILLIKEN evaluates long-range plans.

New R&D Tec

Research and development activities at M. W. Kellogg Co. are taking a new turn these days. The aim is diversification — Kellogg is seeking business in areas of the CPI it has never tried before—and the change has added new personnel to Kellogg's staff of veteran specialists.

It's all part of a plan that got under way in mid-'57. In the past, Kellogg has been known primarily for engineering, design and construction in the petroleum and petrochemical fields. Now, in going after new process industries work both here and abroad, the company isn't changing its interests—rather, it's shifting its emphasis. Kellogg foresees no decrease in its activities in the petroleum field. In fact, the company expects that all phases of its operation will benefit from the new program—it's probable that the broadened scope of the new R&D group will uncover technologi-

SOLOMON studies R&D processes.



OBLAD (top), SCHWARZENBEK coordinate specialized lab groups.

CW PHOTO—LIONEL CRAWFORD

VENER (right) prospects new fields for cooperative research projects.

HEINEMANN (left) heads exploration.

CW PHOTOS (EXCEPT WHERE OTHERWISE INDICATED)—ED WALLOWITCH

acks Kellogg's Diversification Bid

cal advances that can be used to improve petroleum processing practices.

Policy Planning: Diversification isn't a new experience for Kellogg. In '56, the company made plans to get into the production end of the business with a Phillips-process polyethylene plant (*CW, Feb. 25, '56, p. 98*). It already had a position in the plastics manufacturing field by virtue of its Kel-F business, felt that expanded production operations would help to level out the peaks and valleys inherent in the engineering and construction business. This plan was later abandoned, however, and the company got out of plastics manufacturing when it sold Kel-F to Minnesota Mining & Manufacturing Co. early in '57.

Though Kellogg's present diversification program will take it into new processing fields, the company this time is sticking to the job it know best —the engineering-construction end of the business. The carefully thought-out policy was delineated by President Warren Smith in mid-'57. The goal: to promote the growth of the company's engineering and construction business and its equipment manufacturing activities through broader R&D, in fields with a high degree of technical content.

The first step towards putting the plan into action was the selection of a new vice-president to head the R&D department and staff it to handle the new assignment. Smith sought a man with executive experience in R&D, a thorough understanding of petroleum and petrochemical operations, and the initiative, versatility and imagination to extend Kellogg's know-how into new processing fields. His choice: Alex Oblad.

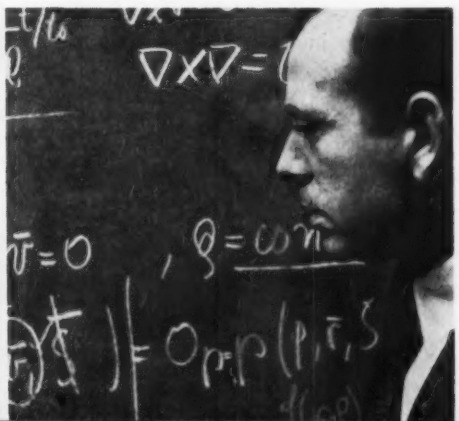
Key Man: Prior to joining Kellogg, Oblad was with Houdry Process Corp. for 10 years, where, among other jobs, he served as vice-president in charge of research and development and was a member of its board of directors.

Oblad is sold on the advantages of cooperative R&D. He feels that the combined efforts of two or more companies can achieve process development more quickly and cheaply than can an individual company's lone effort. At the same time, the joint operation assures more efficient utilization of valuable scientific and engineering talent. This fits in well with the Kellogg tradition that has led to such cooperative development projects as fluid catalytic cracking, the SBA acetylene process, and the Hojalata y Lamina iron ore reduction process.

Oblad's soft-spoken manner doesn't hide his enthusiasm for the task at hand: the welding together of highly

KNAUS (right) supervises operational test of projects in the pilot-plant stage.

MILLER solves mechanical problems.



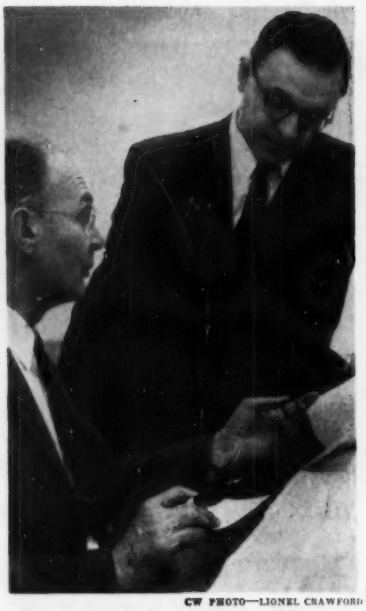
creative people into a development group that can handle a wide variety of projects based on common technological principles. Says Oblad: "The coupling of this type of R&D with Kellogg's extensive engineering capabilities should make for outstanding productivity in new process developments.

"A researcher must be well trained in fundamentals and highly skilled in a specialized field," says Oblad. "But he should also have inventiveness and flexibility so that he can apply his particular background and skill to other fields of technology." An expert in catalytic chemistry, for example, should be able to apply his know-how to other areas of surface chemistry, such as those employed in metallurgical processing, as effectively as he does to, say, a cat cracking problem. In keeping with this philosophy, Oblad has concentrated on building a staff of R&D management men accustomed to thinking in terms of a broad spectrum.

Building the Team: To provide the balance of specialized skills, Oblad is adding more physical chemists and mechanical engineers to Kellogg's veteran R&D staff, placing greater emphasis on engineering research and on the relatively new field of applied mechanics. His three key administrative aids: 22-year veteran Kellogg staffer Eugene Schwarzenbek, director of laboratory; Raymond Vener, manager of industrial research and development; and Thomas Milliken, director of planning. Here's how their roles are furthering the company's long-range R&D objectives:

Vener's responsibility is to establish and maintain contact with outside organizations for the purpose of obtaining cooperative research. At present, the bulk of Kellogg's R&D activities are concentrated on "inside" projects calculated to lead to royalty income or new engineering and construction contracts. The others are devoted to service work required to back up the company's construction business, and to cooperative research.

By concentrating on cooperative research, Vener is furthering the over-all plan by, as he puts it, "getting work that can be parlayed into useful background for future activities—either in a proprietary position or in new engineering and construction business—in new fields."



CW PHOTO—LIONEL CRAWFORD

FRIEND (left) and SKAPERDAS correlate data, process engineering.

As director of planning, Milliken is responsible for directing, programing and planning long-range R&D. Specifically, his job is to evaluate new ideas submitted to the R&D group in terms of long-range goals, to coordinate technical intelligence with market analysis, and—based on his evaluation—to recommend a course of action.

Laboratory director Schwarzenbek is responsible for seeing that the projects accepted for R&D are carried out as planned. Schwarzenbek's chief aides at the company's Jersey City, N.J., laboratories are the associate laboratory directors, each of whom is a specialist in his own particular field:

- Heinz Heinemann, a physical chemist and expert in the field of catalysis, heads the exploratory chemical research group.
- Ernest Solomon, a specialist in fundamental process research, handles process development studies required to span the gap between exploratory research and pilot operation.
- Joseph Knaus is in charge of the more than 30 pilot plant installations at Jersey City, supervises the piloting of R&D projects.
- Dexter Miller is in charge of Kellogg's mechanical engineering group, specializes in the mechanical

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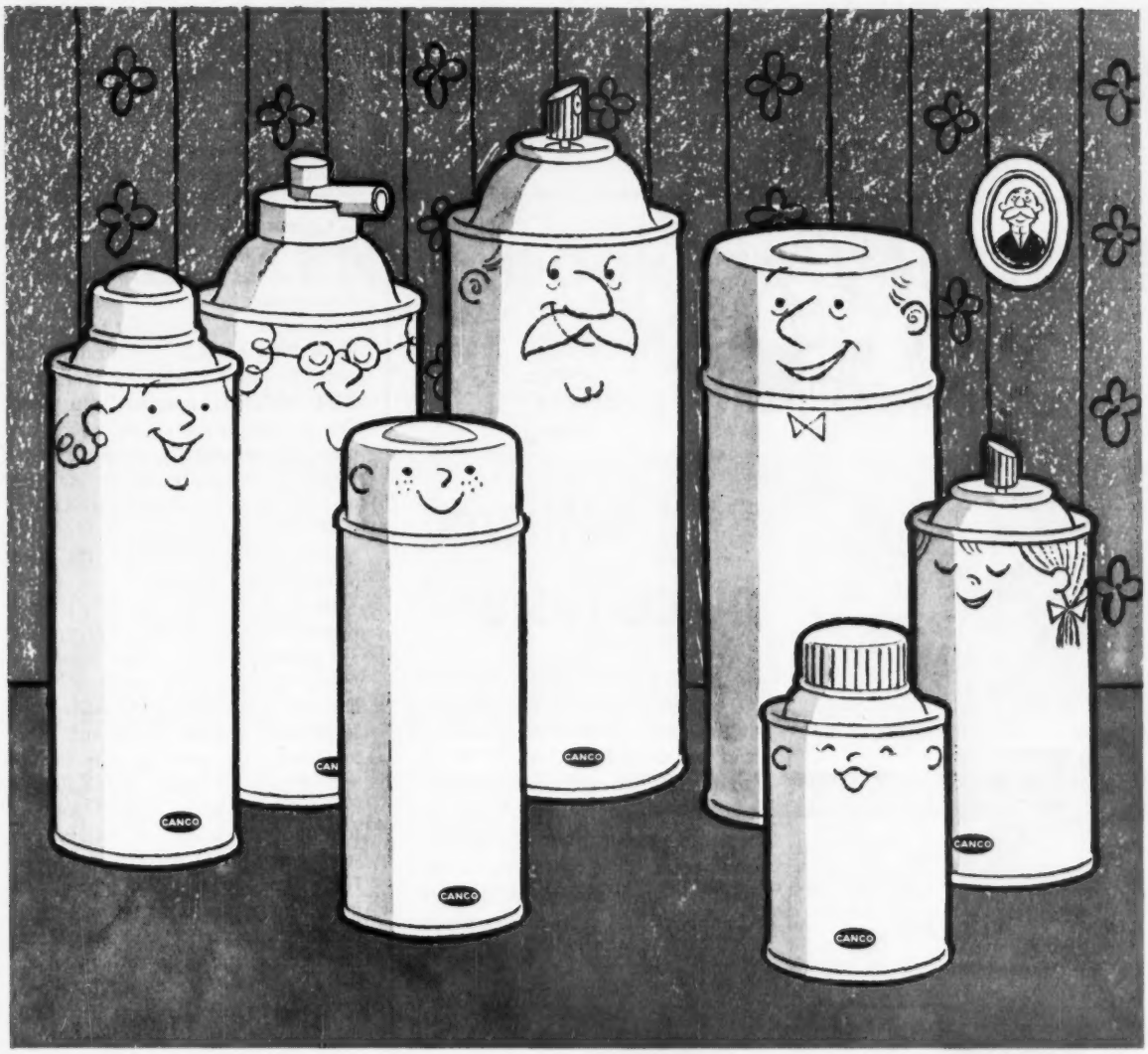

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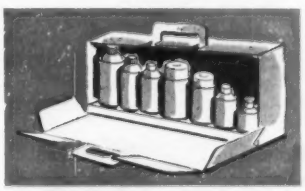

CANCO Division AMERICAN CAN COMPANY

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problems of R&D projects and directs the design of new or unusual equipment tailored to special process requirements.

In addition to this laboratory staff, Kellogg's R&D department includes two associate directors of chemical engineering at the company's New York headquarters:

- Leo Friend supervises the design data section which correlates the physical, chemical and thermodynamic data required for process design.
- George Skaperdas heads the process design section which works on all phases of process engineering development.

Scientists, engineers and technicians in Kellogg's R&D organization account for some 150 of the company's 1,200 technical personnel. In addition to supporting all phases of domestic engineering and construction activities, this staff backs up the 500-man Kellogg International Corp. (London) in the two-way exchange of process know-how with the company's foreign clients.

Opening New Fields: Such jobs as Kennecott Copper's new refinery, the Tennessee Pulp & Paper plant, a sponge-iron plant for Mexico's Fierro Esponja, S.A. (Monterrey affiliate of Hojalata y Lamina, S.A.), and Morton Chemical's activated clay facility are tangible evidence that Kellogg's know-how is being applied successfully to a variety of fields. The streamlined R&D group is pursuing further developments in these and other new areas, at the same time is continuing to support Kellogg's extensive petroleum and petrochemical activities.

With its entry into these new fields —ferrous and nonferrous metallurgy, pulp and paper—Kellogg is gearing up for the '60s, hopes to double its current volume of business.

While these new activities are basic building blocks of Kellogg's broadened R&D foundation, they're by no means the extent of the company's interests.

Its new R&D management team is confident that there are opportunities in many processing industries that are on the threshhold of new technological development. And its streamlined R&D program under Oblad's direction looks to them like the right vehicle to carry the company to its diversified goals.

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☐ **Applied Mathematics in Chemical Engineering** by H. S. Mickley, T. K. Sherwood, and C. E. Reed. Publisher's Edition $9.50. Club Price $8.10.

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Then, there's the problem of pickling copper and brass. Lots of pickling agents will do this – only trouble is, you've got to paint or plate or do whatever you're going to do with the metal rather quickly. Or else. Or else it will tarnish or oxidize and you're in the pickle all over again.

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No. 86 – Improving Properties of Copper and Brass Surfaces.

No. 97 – Paddle Etching of Printed Circuits with Ammonium Persulfate.

No. 99 – Tank Immersion Etching of Printed Circuits with Ammonium Persulfate.

No. 102—Etching of Printed Circuits with Mercury Activated Persulfate.

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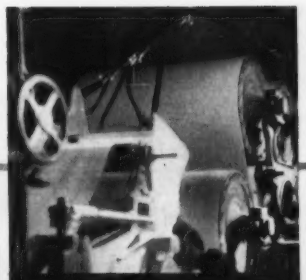

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Technology
Newsletter

CHEMICAL WEEK
May 2, 1959

Allied Chemical is producing a new kind of nylon tire yarn at Hopewell, Va. The new yarn is now being used "in volume," says Allied, by all major tire producers and a number of smaller companies in casings for passenger cars, trucks, buses and off-the-road equipment. The yarn, called Golden Caprolan, features heat stability and "an exceptionally high level" of resistance to flex fatigue—important in prolonging tire sidewall life.

Ten years of research, development and test-proving lie behind the new yarn, Allied reports. Key to its properties is the development of a process to make highly pure caprolactam monomer, which when polymerized overcomes drawbacks previously associated with caprolactam polymers. (Golden Caprolan is a polymer based on ε-aminocaproic acid and has a molecular construction "almost identical" to that of nylon-6/6, the firm reports.)

•

A new one-solution photographic developer-fixer, a product of Cormac Chemical Corp. (New York), was exhibited at the New York Photographic Show, ending this week. The new product is called Unibath, is a mixture of developer, fixer and a buffer. It reportedly compensates for moderate over- and underexposure of film, and cuts film processing time to about one-quarter of the time normally needed.

•

Progress in Foote Mineral Co.'s lithium research was described by research director E. M. Kipp at the firm's annual meeting, this week (*see p. 74*).

A new lithium hydride product that's a more reactive reducing agent than Foote's present commercial product; a series of new lithium metal dispersions that feature high reactivity and uniformity; and an economic and readily controllable process for making high-quality lithium butyl for polymerization catalysis are among the new developments.

•

A phosphorous-containing polyol that imparts flame resistance to urethane foams has been turned up by Virginia-Carolina Chemical Corp. (Richmond, Va.). It is substituted for some of the polyester or polyether normally used in foam making, becomes chemically bound in the foam. Flexible polyester and polyether foams, and rigid polyester foams, can be made flame retardant with the new compound, identified as Vircol-82. Such formulations might be useful in insulation, structural parts, etc.

•

Glasses that melt at 125-350 C (300-400 C lower than previously known low-melting glasses) have been developed at Bell Telephone Laboratories (New York). They're composed of varying proportions of sulfur or selenium and the heavy metals arsenic and thallium, look promising for potting electronic devices.

High-energy oxidizers for advanced solid rocket propellents will be studied by Allied Chemical's General Chemical Division, under a new $750,000 one-year contract awarded by the Army Rocket and Guided Missile Agency (Redstone Arsenal, Ala.). The research will be done at the General Chemical research laboratory in Morristown, N.J.

The division is a major producer of fluorine, chlorine trifluoride and bromine pentafluoride, all of which are under research at rocket and missile research centers as oxidizers in advanced fuels. Allied's entry in the field is reviving speculation that future solid fuels might contain the oxidizer in the binder; current materials have the "fuel" in the binder.

Allied is the fifth major chemical firm to snare a solid-fuel research contract in recent months. Dow Chemical, Esso Research & Engineering, Minnesota Mining & Manufacturing, and American Cyanamid were awarded contracts to work on "radically new" solid propellents last November (*CW, Nov. 8, '58, p. 24*).

•

Two Office of Saline Water stills showed divergent results to visitors at International Nickel's Harbor Island, N.C., test station last week. On one hand, the W. L. Badger long-tube vertical unit appears to have licked the scale problem, has just completed a 1,100-hour scale-free run at 250 F. First comprehensive report on 18 months of experimental activity on this method will be published soon by OSW, which is now selecting a demonstration plant site for it (*CW, April 25, p. 55*).

However, serious problems have beset the Badger-Hickman rotary vapor-compression still. Disappointing heat-transfer results caused the unit to be shut down about four months ago, sent Battelle Institute's resident engineer back to experimenting with a smaller unit.

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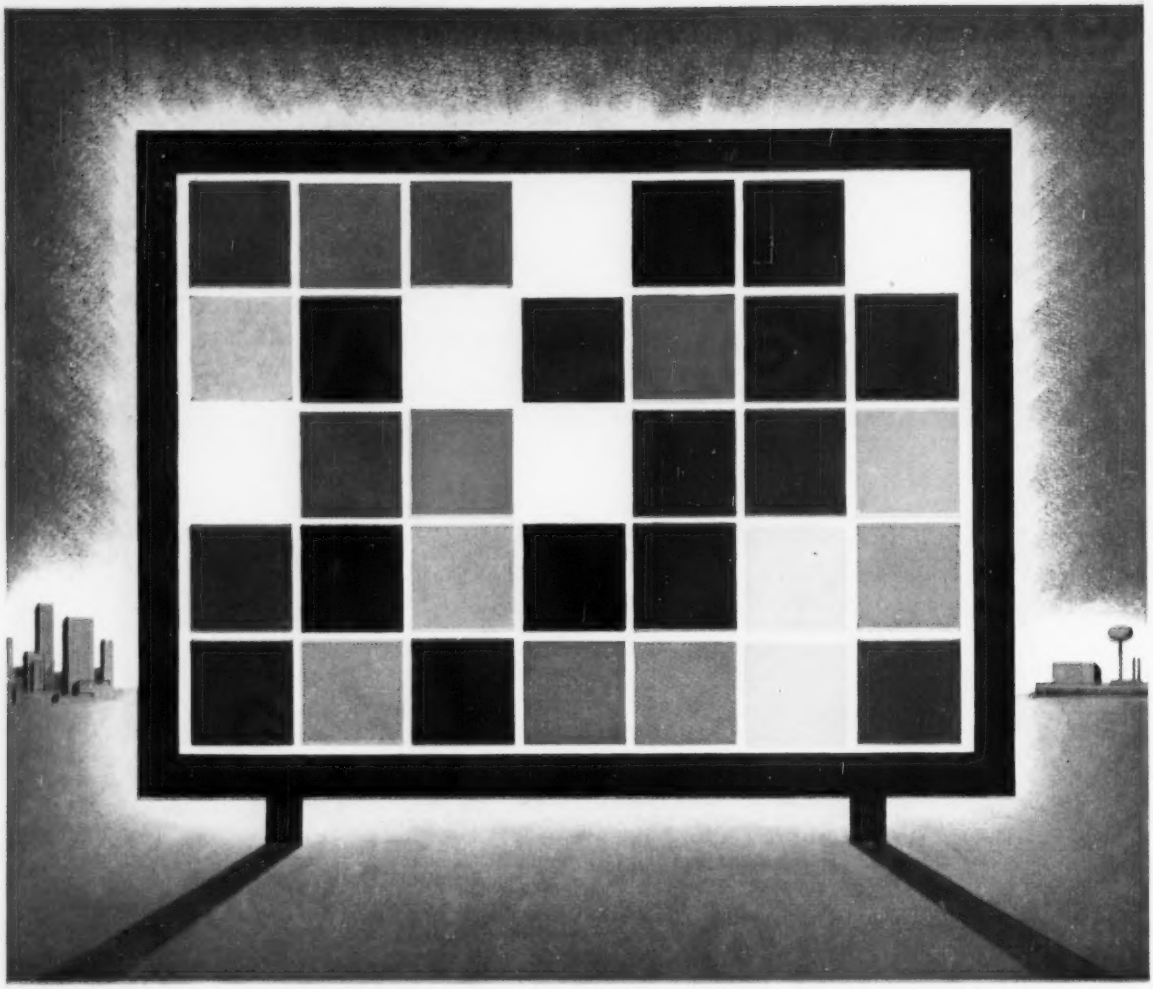
Support of scientific publications and information services is being stepped up by the National Science Foundation's Office of Information Service. NSF grants totaled $527,903 in first-quarter '59, $109,300 in the comparable '58 period.

•

Gibberellic acid's next commercial use may be in increasing the proportion of lemons suitable for storage and in prolonging their storage life. In tests at the University of California (Riverside), gibberellin-treated lemons colored more slowly and stored longer than lemons from untreated trees. But some undesirable side effects, which will require further research, were noted.

•

Ways of strengthening the nation's basic research will be explored by science, government, education and industry experts in a symposium in New York City May 14-16. President Eisenhower will address the May 14 dinner session of the symposium, to be held under the joint auspices of the National Academy of Sciences, the American Assn. for the Advancement of Science, and the Alfred P. Sloan Foundation.



How Shell Chemical serves the surface coating industry

Shell Chemical has maintained for many years an active program of practical and theoretical research in oxygenated solvents and Epon® resins for surface coatings.

The result has been a better understanding of the effect of solvents on film formers—leading to superior performance and greater economy in surface coating formulations.

Epon resins are still another important outgrowth of Shell research. Surface coatings based on Epon resins are among the hardest, toughest, and most resistant to the attack of chemicals and corrosion ever developed.

Shell Chemical's Technical Service Laboratory offers you assistance in solving surface coating formulation problems. Write or phone your nearest Shell Chemical district office if we can be of assistance.

Acetone
Bisphenol-A
Diacetone Alcohol
Di-Tertiary Butyl Peroxide
Epon® Resins
Ethyl Alcohol
Ethyl Amyl Ketone
Glycerine
Hexylene Glycol
Isopropyl Alcohol
Isopropyl Ether
Mesityl Oxide
Methyl Ethyl Ketone
Methyl Isobutyl Carbinol
Methyl Isobutyl Ketone
Neosol® Proprietary Solvent
p-Tertiary Butyl Benzoic Acid
Secondary Butyl Alcohol

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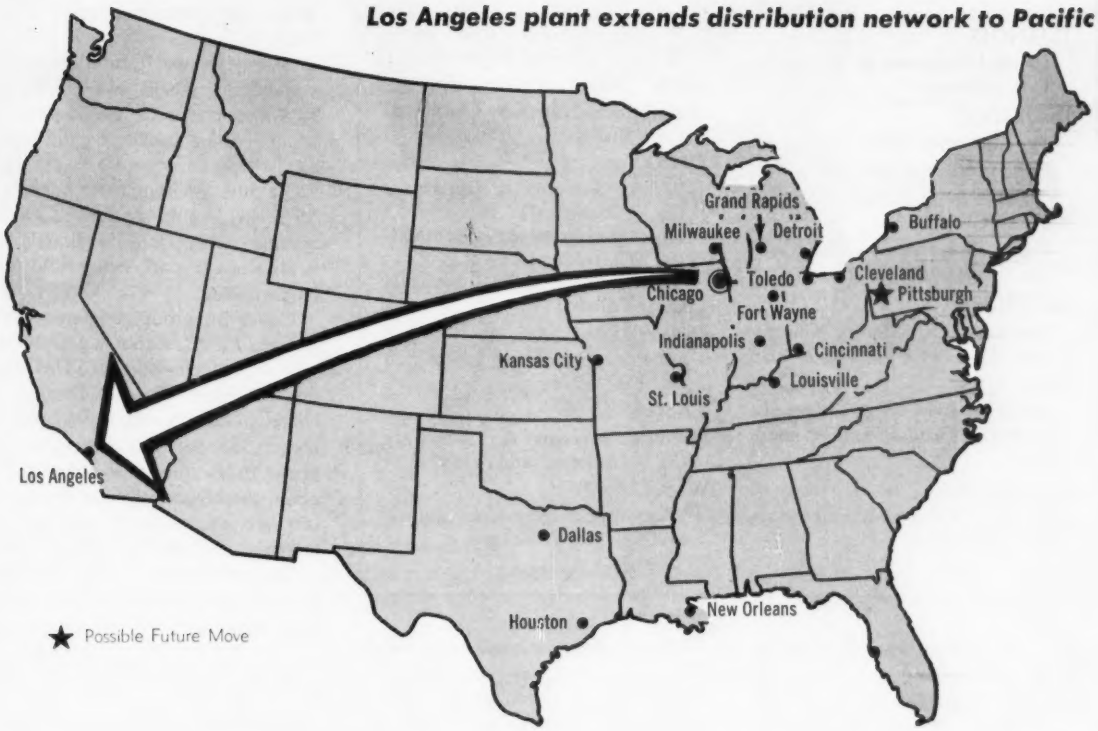
SHELL

Solvents and Chemicals' Long Leap West



Striding Toward a National Sales Network

Sometime later this year, Central Solvents & Chemical Co., a major midwestern distributor, hopes to take a long-planned leap into Pacific Coast chemical markets. The firm will make the first addition since 1956 to its large network of chemical distributors, the Solvents and Chemicals Group.

But the jump to the West Coast represents more than the construction of a half-million-dollar distributing plant and the opening up of a new marketing territory. Rather, the move signals an entirely new phase in Central's steady growth—a growth that has more than doubled sales in the past 10 years, and one that has carried Central to an annual gross sales volume of about $30 million.

Going National: Central has conducted market surveys in the Pittsburgh area although no specific plans have been made. The firm is especially hopeful of setting up facilities on the East Coast and in the Southeast—either through construction of a new plant or through acquisition of an established distributor. Should these plans materialize, as is likely, Central would become a full-fledged national chemical distributor.

Even the name chosen for its new West Coast distributor, Central Solvents & Chemical Co. of California, discloses the company's plans to go national. Until now, only the parent firm, located in Chicago, has used the word "Central" in its title. The subsidiary companies use the name of the territory in which they operate and will continue to do so. Corporate identity is currently maintained by linking the subsidiary with the "Solvents and Chemicals Group" logo.

Why is Central planning expansion now? Basically, it's because the time is opportune. Population, hence the chemical market, is slated for great expansion in the years ahead, especially on the West Coast. In recent years, Central has set aside large portions of earnings for possible expansion. At the same time, the company has been carefully upgrading existing facilities, customer service and personnel. The results of this policy have produced the growth, earnings and leadership necessary to handle installation or acquisition of new facilities.

Establishment of the California company will increase, to 15, the number of companies operating in the Solvents and Chemicals Group (*see table, p. 66*). The group got its start in Chicago in 1926 when the Wm. J. Hough Co. was founded as a distributor of naval stores, tar products, linseed oil and other chemical materials.

In 1931, individual stockholders of Hough acquired a distributor in St. Louis. By 1948, nine additional companies had been acquired by the stock-

Spanning North America's Chemical Markets — Where Solvents & Chemicals has its plants.

ILLINOIS
- Central Solvents & Chemicals Co. (Chicago)

INDIANA
- Hoosier Solvents & Chemicals Co. (Indianapolis and Fort Wayne)

KENTUCKY
- Dixie Solvents & Chemicals Co. (Louisville)

LOUISIANA
- Southern Solvents & Chemicals Co. (New Orleans)

MISSOURI
- Missouri Solvents & Chemicals Co. (St. Louis and Kansas City)

MICHIGAN
- Western Solvents & Chemicals Co. (Detroit)
- Wolverine Solvents & Chemicals Co. (Grand Rapids)

NEW YORK
- Buffalo Solvents & Chemicals Co. (Buffalo)

OHIO
- Amsco Solvents & Chemicals Co. (Cincinnati)
- Ohio Solvents & Chemicals Co. (Cleveland)
- Toledo Solvents & Chemicals Co. (Toledo)

ONTARIO
- Western Solvents & Chemicals Co. (Windsor)

TEXAS
- Texas Solvents & Chemicals Co. (Houston and Dallas)

WISCONSIN
- Wisconsin Solvents & Chemicals Co. (Milwaukee)

holders of the Hough distributing firm. In the same year, Central Solvents & Chemicals Co. was organized. It acquired the Hough company and the 10 firms held by Hough's stockholders. Since then, Central has established four additional subsidiaries. Southern Solvents & Chemicals Corp., New Orleans, is not a subsidiary; however 50% of its stock is owned by Central's stockholders.

Today, Central is the parent company and all other members of the group—with the exception of Southern—are wholly owned.

Besides functioning as the parent firm, Central is also the distributor in the Chicago area. Central's board of directors and top management set a broad general policy for the subsidiary firms. The latter are independently set up.

Many executive officers drawn from the group companies are members of Central's board of directors.

Central's management, besides setting broad policy, also tightly controls supplier selection and relationships. The aim is to develop rapport with a small, well-defined group of suppliers. Major capital expenditure decisions and general marketing policy also flow from Chicago headquarters.

Local companies handle day-to-day problems in selling and marketing, local marketing supervision and servicing, credit, bookkeeping, inventory, blending, packaging, shipping and other functions. Personnel decisions, except those regarding high-level placements, are also a function of local management.

Assets in the Plan: Central's organization—unique as far as distributors are concerned—helps foster several benefits. It provides flexibility and quick delivery, a single source of supply of chemical requirements for geographically diversified customers, and coordinated sales and purchasing efforts. The firm can often supply identical material to accounts with plants at different locations. And, the decentralization tends to increase the personal attention and service to customer requirements over and beyond that which might be expected from a centralized — and remote — headquarters.

On the other side of the coin, Central's network provides a ready-made distribution system for basic producers. Right now, it sells some 400 different items for about 20 suppliers. Included in the roster of suppliers: American Mineral Spirits Co., Alcoa, GAF's Antara Chemical Division, Olin Mathieson's Blockson Chemical, Dow, Du Pont, Ohio-Apex division of Food Machinery, Hercules Powder, two divisions of Standard Oil of New Jersey Enjoy and Penola), and Warwick Wax.

Market Scope: Central repackages, warehouses, labels, blends and ships. It functions as a distributor, sales agent, custom packer, reseller and, in a few cases, as an exclusive agent. Some 30% of its tonnage is in solids, 70% in liquids. Most of its sales volume stems from its liquids business, a large part being sold under its own label.

Generally, group companies service an area falling within a 100-200-mile radius of their location. The bigegst market areas—Chicago, Detroit, Cincinnati and Cleveland—account for about 50% of the company's total sales. From the sales-volume viewpoint, the biggest items in the product mix are the aliphatic and aromatic solvents, and chlorinated solvents.

The protective coatings and metal finishing industry (metal cleaning and degreasing) are Central's largest customers. But the ink, adhesive and specialty trades also account for substantial revenue.

Cornerstone: Over the years, Central has built its business to those trades on service, manpower, dependability, solid supplier relations, ethical practice and favorable pricing. Some 80 people, many with a high degree of technical training, comprise the Solvents group's marketing staff. Product knowledge, reports Central, underlies their activity: Almost every week, one or more can be found taking some special, supplier-sponsored training. And many are in a position to offer on-the-spot technical service, although Central, like most distributors, relies on its principal for extensive laboratory work.

To be sure, quick delivery of chemicals and solvents with guaranteed specifications looms large in the solvents group's marketing efforts. But the group is equally proud of "plus services." Prime example: rapid notification to its customers of new price changes and changes in product availability. Inventories are deliberately kept "at more than adequate levels."

Plant Investment: Backing up the group's manpower and service activi-

ties is an impressive investment in plant facilities. Assets, net worth and appraised valuation are all at the "several million dollar" mark.

Total storage capacity is 10-million gal. (the West Coast expansion will boost this by nearly 10%). Warehouse space in use is 95,000 sq. ft. and some 38 acres of land are either owned or leased. And a fleet of 11 transport trucks (5,000-7,000-gal. capacity), 15 tank trucks (1,000-2,000-gal. capacity), and 48 trucks (with floor space for up to 60 drums) for packaged items, move the group's products to customer sites.

The large investment in bulk facilities makes it easy for group companies to post competitive price schedules. But group companies have a reputation for maintaining price stability, following the prices suggested by suppliers.

In customer solicitation, group companies make much of their ability (in many but not all instances) to offer tank-car prices on products shipped together in compartmentalized tank wagons to customers.

Rounding out the solvents group's operating code: close relations with suppliers. The company, for example, cooperates with suppliers in product promotion, maintains extensive stocks of product samples and literature at all locations. Good relations with principals, adds Central, makes possible close cooperation, encourages suppliers to provide more than routine technical and delivery service.

Forward Glance: Expansion thinking at Central is broader than new operations in the Far West and in the East. The company is keenly searching for new products to market through its extensive network. Because of its experience and facilities, liquid products are the most attractive but solids are by no means excluded. (Only last year, the group added asbestos to its line.) The important thing, asserts its management, is that the product be of a nature that Central can make a positive marketing contribution. And that means that the deal must make sound economic sense to Central, the supplier and potential customers."

Chemical manufacturers today think of distributors largely in terms of an outlet to the less-carload-lot and semibulk markets. Management nevertheless foresees the day—perhaps in the not-too-distant future—when rising distribution costs may well encourage prime producers to use distributors to market moderate volumes of tank-car-quantity chemicals. If and when that happens, Central will be ready. In any event, current expansion plans will give the firm a solid position in major national markets, and will provide a new spur to its consistent pattern of sales growth.

DATA DIGEST

• **Organic chemicals:** 28-page reference booklet discusses physical properties of over 400 organic chemicals along with brief description of fields of application; 57 new products are covered for first time, including polyethers, water-soluble resins and hydroxyethyl cellulose. Union Carbide Chemicals Co. (New York).

• **Methyl ethers:** New catalog describes, with illustrated charts and graphs, the physical and chemical properties, specifications, toxicity and applications of hydroquinone dimethyl and monomethyl ethers. Also included: a bibliography containing 25 reference sources. Ansul Chemical Co., Chemical Products Dept. (Marinette, Wis.).

• **Laboratory equipment:** Revised 1,273-page catalog gives 8,000 product descriptions, prices, integrated index, cross references and illustrations. Chemical Rubber Co. (2310 Superior Ave., Cleveland 14, O.).

• **New organics:** Catalog lists product designations, descriptions and specifications for Emery's line of organic chemicals. Covered: dimer, azelaic, pelargonic, capric and caprylic acids, esters, plasticizers and metholene fatty acid esters. Emery Industries, Inc., Dept. 5 (Carew Tower, Cincinnati 2, O.).

• **Isobutylene:** Wall chart illustrates isobutylene's present commercial uses and reported reactions. Keyed to facilitate further exploratory work in this field. Chart is accompanied by a bibliography of 213 literature references. Petro-Tex Chemical Corp. (Houston 1, Tex.).

• **White mineral oil:** Brochure discusses application of Atomol, a highly refined mineral oil for use in atomic shielding windows. Outlines tests, lists product requirements for best service and gives product specifications. L. Sonneborn Sons (300 Fourth Ave., New York 10, N.Y.).

• **Ethylene amines:** 65-page book covers properties, reactions, techniques, storage and handling, includes graphs of physical properties and bibliography of patent and use sources. Applications in the textile, paper, pjetroleum and rubber industries are discussed in addition to use in the manufacture of resins, plastic films, adhesives, chelating agents and polishes. Dow Chemical Co.

• **Urethane:** Three new bulletins describe Rigithane 112, in terms of its properties, applications, storing and handling characteristics. Various types and names of mold release agents, their properties and effect of catalysts with the resin are also given. Thiokol Chemical Corp. (Trenton, N.J.).

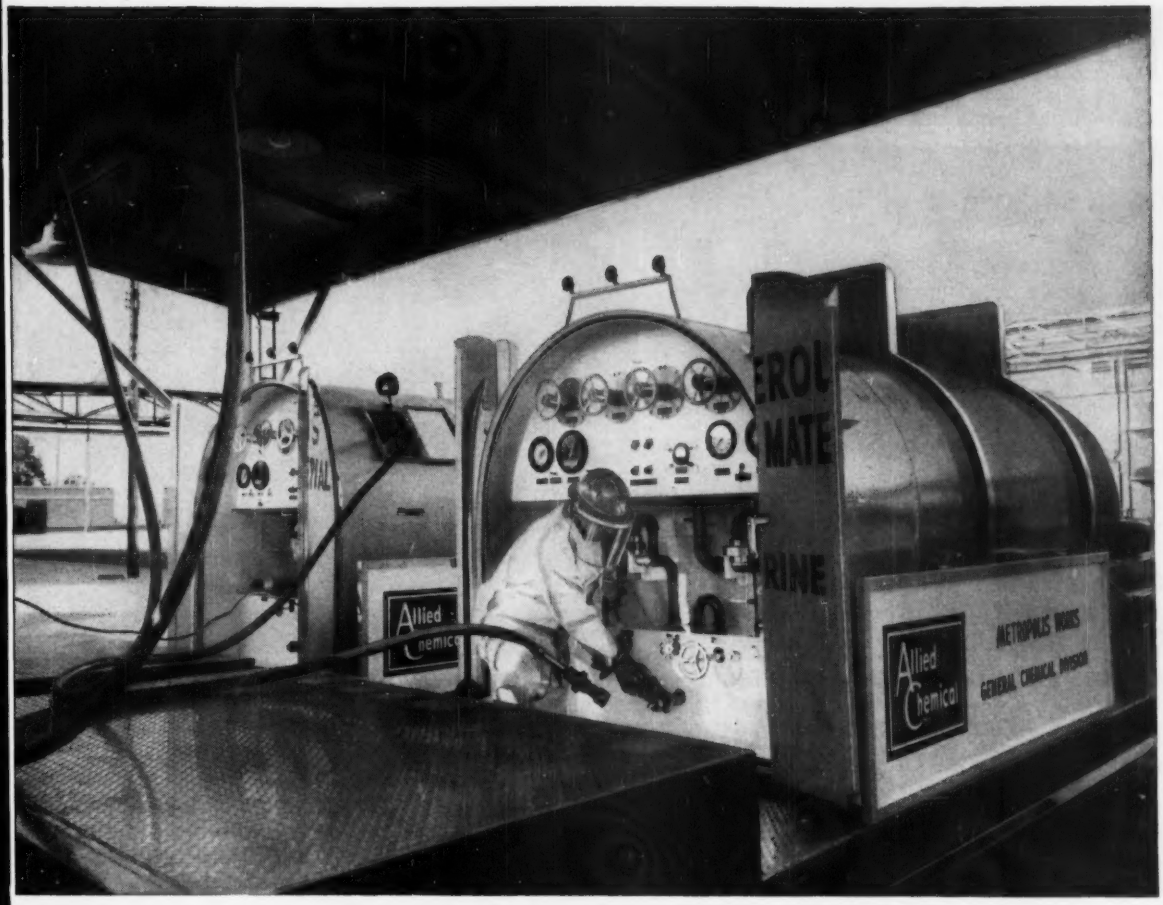
• **Sodium cellulose material:** Data sheet lists product specifications, characteristics, uses and advantages of sodium carboxymethyl cellulose materials. It describes use of chemicals in drycleaning and commercial laundries as finishing aid and as an additive in the soap-tank. Hercules Powder Co. (Wilmington, Del.).

• **Dioctyl sebacate:** Physical properties, applications, advantages, specifications and uses for dioctyl sebacate are described in new bulletin. Harchem Division, Wallace & Tiernan Inc.

• **Automatic Power Scoop:** Folder describes new automatic power scoop to handle removal of granular materials from box cars. Other data gives specifications and design information. Alden Equipment Division, Amercon Corp. (900 North Alvarado St., Los Angeles 26, Calif.).

• **Sodium phosphate products:** Revised, detailed technical bulletin presents data on physical and chemical products, tells how products can be used in detergent production, food and textile processing, water treatment, livestock mineral supplements and as deflocculating and buffering agents. Inorganic Chemicals Division, Monsanto Chemical Co. (St. Louis).

• **Sodium formate:** New, eight-page brochure reviews chemical and physical properties, presents product specifications and discusses applications in oil well corrosion inhibitors, tanning industry pickling, secondary oil recovery, steel case hardening, scrubbable wallpaper, engine antifreezes, plating baths and catalysts. Heyden Newport Chemical Corp. (New York).



New trailer delivers 2½ tons of liquid fluorine

Corrosive chemical travels safely, stays pure, in Monel

Commercially pure liquid fluorine in bulk is now being shipped thousands of miles. It goes in 2½-ton capacity truck-trailers like those shown above.

The trailers are equipped to cool the fluorine below its boiling point with liquid nitrogen. Units are said to be so efficient that fluorine will remain liquid several weeks even in searing desert weather. Bulk fluorine shipment and the equipment to accomplish it are developments of General Chemical Division, Allied Chemical Corporation.

Inertness of Monel to fluorine safeguards shipments and quality

The inner "business" tank in the trailer is Monel* nickel-copper alloy. The enclosing nitrogen tank is Nickel-containing stainless steel.

Both Monel alloy and the Nickel-containing stainless steel retain excellent ductility and strength well below the sub-zero temperatures of liquid nitrogen. They're well able to withstand unexpected pressures and the shocks of travel.

In tanks made of these alloys the fluorine proceeds tranquilly to its destination. There it can be stored in the same tanks until used.

Monel alloy is also highly resistant to corrosion and to ignition in fluorine at high temperatures since it forms a protective adherent fluoride film. Shipment remains free of contaminating corrosion products.

Protect *your* fluorine processing and handling equipment with Inco Nickel Alloys. A new Inco fluorine booklet, "Handling Fluorine and Fluorine Compounds," goes into detail on fluorine corrosion, suggests means of overcoming it. If you like, we'll send you a copy.

*Registered trademark

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street — INCO TRADE MARK — New York 5, N.Y.

INCO NICKEL ALLOYS

PRODUCERS' FRIEND: Import-bill sponsor Allott.

CW PHOTOS—ALFRED WAGG

CONSUMER MITCHELL: Heads strong CPI opposition.

Sellers, Buyers Split on Fluorspar Imports

The nation's $14-million/year domestic fluorspar industry is pushing harder than ever for legislation to restrict U.S. fluorspar imports. The preliminary hassle before a Senate Interior Committee last fortnight underscored importance of the outcome to many fluorspar consumers in the CPI.

The first lively skirmish was aimed at rolling a bill—introduced by Sen. Gordon Allott (R., Colo.) and twelve cosponsors—through the committees and onto the Senate floor. The bill, patterned after the now well-established Sugar Act, would authorize division of the U.S. fluorspar market between domestic and foreign producers on basis of annual estimates of the nation's requirements.

But for fluorspar producers it will be rough going all the way; arrayed against them in a solid front are several government agencies and the organized opposition of major fluorspar consumers—including many big chemical companies.

Subtle Support: During recent official hearings, no other domestic mining industries testified in favor of the bill; they let fluorspar producers face the heavy opposition alone.

But behind the current scene, domestic producers of lead, zinc, cobalt, tungsten, and many other commodities have been quietly urging their Congressmen to support application of the Sugar Act import quotas to fluorspar. They hope that if this approach proves successful for that mineral, it may lead to laws to protect their own products as well.

Although opposition has been largely vocal, mining-state legislators claim to have the votes needed to pass the bill in the Senate, are hopeful of guiding it through the House as well. A presidential veto—predict more-optimistic proponents of the bill—may be avoided or even overridden.

Strongest of the fluorspar bill's backers is Clyde Flynn, Jr., secretary and general counsel of the independent fluorspar producers' association. Flynn supports the bill on grounds that protection is needed to guard a domestic industry from rising imports (from Mexico and Canada) and because the mineral's importance in the missiles field makes a strong domestic industry important.

He claims that much of the recent growth of demand, and predicted future growth of production, centers around captive producers. Independent domestic production, he adds, has been reduced to one mine and two mills; even captive production is down to three mines and three mills.

Hardship Minimized: Production, consumption, as well as import statistics were raked over in many directions—and the interpretations didn't always come out the same.

For example, Interior Dept. Assistant Secretary Royce Hardy, who registered the Administration's opposition to the bill, cited a census of the fluorspar industry, recently completed by his office.

Hardy testified that predicted '59 production of all three grades of fluorspar breaks down like this: acid-grade, 100,000 tons; metallurgical-grade, 39,000 tons; ceramic-grade, 10,000

PRODUCER FLYNN: Fighting for a stronger domestic industry.

U.S. Fluorspar Suppliers

(short tons)

	1956	1957	1958*
Mexico	315,610	391,048	244,983
Canada	34,743	20,054	8,156
Europe	135,199	219,132	138,940
Africa	—	1,133	82
Total imports	485,552	631,367	392,161
U.S. (shipments)	329,719	328,872	320,000

*Preliminary. Data for U.S. production (shipments) in '58 will likely be increased when all industry reports are received by U.S. Bureau of Mines.

tons. He also estimated that 75% of the high-acid-grade type represents captive production; the rest is independently produced.

Imports, Hardy reported, have increased gradually, since '52, to the point where they exceed domestic production (*CW, March 29, '58, p. 63*). But in '58, he noted, fluorspar imports dropped to 240,000 tons or 38% below the '57 total. (He probably referred to acid-grade material only; total '58 fluorspar imports, according to U.S. Bureau of Mines, were 392,161 tons.) He further argued that Mexican and Canadian fluorspar exports to the U.S. (comprising the bulk of all foreign supplies) are actually essential to—and do not threaten—U.S. national security.

According to Interior Dept. estimates, there are fewer than ten so-called independent fluorspar producers in the U.S.—who, in '59, will turn out less than 75,000 tons of the three grades of the mineral. Administration and industry opponents of the bill, in fact, charge that the legislation would benefit only two or three companies.

Blocked by Chemical Bloc: Major chemical firms have been drawn into the fray in opposition to the proposed bill. At recent hearings, the industrial importance of fluorspar to the CPI was highlighted by charges, leveled by Senators on the Interior Committee, that fluorspar users have brought undue pressure against the bill through a powerful fluorspar consumers committee headed by Charles Mitchell, vice-president of Stauffer Chemical's Nyotex Division.

Mitchell has presented a strong case against the bill. Testifying against it, he explained he spoke for seven other companies besides Stauffer: Du Pont, Alcoa, Harshaw, Dow, Pennsalt, Union Carbide, and Olin Mathieson He cited the growing role of acid-grade fluorspar as a major source of fluorine in chemical manufacturing, pointed to its use in making refrigerants, propellents, and its use in processing aluminum and steel.

He then blasted the import quota bill as restrictive and disruptive to U.S. trade and foreign economic policy, and specifically charged that import quotas would drive up not only the domestic price of fluorspar, but would also boost the cost of chemicals and production in the consuming industries.

The Government's United Front: Mitchell's views on foreign trade and the nation's economic policy were buttressed by a solid front of opposition to the bill by representatives of Interior, State, and Commerce Depts.; these spokesmen testified that the Sugar Act approach to fluorspar would derail the Administration's foreign trade policy and lead to possible government control of domestic mineral producers. They argued that the consuming industries are coming out of the recession, and fluorspar doesn't even need subsidy support (voted down last year) as proposed by Interior Secy. Fred Seaton.

But the subsidy angle was a weapon also swung by backers of the current bill; mining-state senators—led by Frank Moss (D., Utah)—sought to embarrass the Administration for opposing fluorspar relief this year, after supporting Seaton's domestic-mine-subsidy bill last year.

Hardy and other Administration witnesses from State and Commerce departments parried this blow by citing a predicted rise in demand for fluorspar which, they averred, would keep both domestic and foreign suppliers busy during the foreseeable future.

What will happen to U.S. fluorspar demand this year is, even now, the crux of considerable controversy; not all industry observers are as optimistic as those to whom Hardy alludes. Fact of the matter: it's still anybody's guess how demand will run this year —although the brightening business picture points to a far better year than '58.

Last year, the fluorspar business experienced a general downtrend—although the government's fluorspar purchases softened the impact; but any demand pickup this year will have to compensate for the loss of the federal purchase program (end of '58), as well as industrial markets lost.

An estimated 485,000 tons of fluorspar were used in the U.S. last year (not including government purchases). Manufacture of hydrofluoric acid by far accounted for the major part, about 52% of total demand. Next-largest consumer was steel, which took 34%. Other outlets in '58: glass and enamel, 7%; iron foundries, 3%; miscellaneous uses, 4%.

Manufacture of hydrofluoric acid last year required an estimated 23% less fluorspar than in '57. This partly reflected the decreased production of primary aluminum (*CW, Mar. 14, p. 69*); steelmaking needs were down an estimated 30%, compared with '57.

Slim Chance: All this has led experienced observers of the Washington scene to accord the fluorspar industry only a slim chance of being able to push the bill through. There is some possibility, it's admitted, that some subtle behind-the-fence steamrolling—i.e., pressuring of Congressmen by other metal and mineral groups—could perhaps flatten the opposition and get the measure passed.

In any case, the fluorspar industry isn't pinning all its hopes on this one piece of legislation; stand-by strategy has already been mapped for follow-up activity. And a variety of other bills have been introduced by fluorspar backers, aiming at diverse relief

measures such as tariff boosts, alternate forms of import quotas, price subsidies, production payments.

The committee hearings are now over, the bill next will go to full committee. After that, it's sent to the Senate—perhaps in four to six weeks. But the roughest hurdles—if it gets there at all—will be in the House.

There's a chance that the bill will be killed in short order; late last week, it was enmeshed in jurisdictional disputes concerning which committees should handle it, and proponents of the legislation were having their troubles in maneuvering it toward the Senate floor.

The situation is shaping up in this fashion: Paul Douglas (D., Ill.) and John Williams (R., Del.) of the Senate Finance Committee have raised a legal jurisdictional point with Interior Committee Chairman James Murray (D., Mont.). They successfully urged their chairman, Harry Byrd (D., Va.,), to request that the bill be sent to Finance Committee on the grounds it is an import quota bill and thus belongs with the latter committee.

Douglas—a proponent of liberal trade policies—is against the bill. Williams is mindful of the fluorspar-consuming interests in his home state.

Nonetheless, a deal will be worked out wherein the finance group will get a crack at the bill after Interior reports it out. Washington sources still think it can, and will, be favorably voted out of both committees—which, of course, may add to its strength.

Not the End: One thing only is certain at this point: in the past, U.S. fluorspar producers have amply demonstrated their tenacity; and if things go badly for them this year, they will almost certainly stir up another lively hassle in '60. The battle by domestic producers against influx of foreign fluorspar heats up this time each year.

It means that chemical industry opposition to the current bill—however effective it may prove to be—can be considered only a temporary check of attempted changes in the fluorspar supply/demand and pricing pictures. And there's this disquieting possibility for the CPI: the gratifying all-out support by government agencies in this year's battle might conceivably be lacking in '60, when most important issues will be colored by the election.

Market Newsletter

CHEMICAL WEEK
May 2, 1959

The U.S. lead and zinc business moved into prominence again last week as smelters and producers readjusted prices in line with a strengthening demand, and sought a workable formula to ensure long-range market stability for these competition-beleaguered metals.

Late last week, U.S. lead prices were abruptly returned from 11¢/lb. to the 11½¢/lb. level where they had been earlier this month; as expected, lead oxide prices quickly reflected the metal hike with similar ½¢/lb. increases to previous listings. This short-term pricing cycle on lead and lead chemicals was a carbon copy of similar fluctuations just last month (*CW Market Newsletters, March 14 and April 11*).

But despite the erratic pricing pattern, U.S. lead marketers probably won't find themselves facing a problem such as the one that's worrying copper producers. Reason: the U.S. government isn't likely to make a move to dump the federal Defense Production Act stockpile of lead—which is relatively small in any case—on the open market. Such a move would precipitate a heated controversy like the one that's now raging over the possible disposition of government-owned copper (*CW Market Newsletter, April 25*).

Meanwhile, U.S. zinc experts find good and bad news in the '59 outlook for their industry. At the 41st annual meeting of the American Zinc Institute in Chicago last week, Vice-President C. R. Ince of St. Joseph Lead summarized U.S. zinc prospects by saying that "while the zinc picture is not too depressing, it is nothing to cheer about."

The '58 zinc score was down on all counts, Ince noted. U.S. mine production was down 24%, to 403,000 tons; secondary production was down 35%, to 47,000 tons; metal imports declined by 38% to 195,000 tons, zinc concentrate imports were off by 12% to 417,000. U.S. zinc consumption last year declined to 821,000 tons—11% less than in '57.

But for '59, Ince predicted a 17% increase of zinc consumption on basis of increases forecast by the FRB Index of Durable Manufactures, said a 10% increase of domestic mine production to 440,000 tons in '59 is "not unreasonable." On the gloomy side, Ince pointed to sizable above-ground metal and concentrate stocks, loopholes in the import quota system.

And this week the UN will dig into the lead-zinc problem on an international scale. The imminent meeting of the UN's special committee on zinc and lead prompted President MacKenzie of American Smelting and Refining to express hopes, last week, of a correction of world oversupplies of these metals. MacKenzie's formula: curtailment of production in line with consumption. Sidelight: two weeks ago, Asarco closed its lead smelter at Alton, Ill., because of import competition and loss of business with St. Joseph Lead (*CW Market Newsletter, April 18*).

Union Carbide's near-future polyethylene potential is well over 500 million lbs./year; that's the implication of statements made by company officials at a stockholders' meeting.

Carbide's total low-density polyethylene capacity will be boosted to 410 million lbs./year this summer, when 80 million lbs./year of new capacity comes onstream at Whiting, Ind. But particularly significant is the comment that addition of inexpensive capacity could boost the firm's polyethylene total by 40%. The first such expansion has already been authorized for Texas City, Tex.

Trade observers are asking if Carbide's capacity boosts will bring lower polyethylene prices. It's an especially pertinent question because the new facilities can be installed at capital costs estimated at less than one-third the amount a new merchant producer would have to pay out. But a price break is unlikely, solely for this reason. About half the polyethylene now sold by Carbide consists of grades developed in the past two years at considerable research and development expense. Chances are that the firm will use its capacity-building savings to write off these expenses before thinking much about price cutting. This is especially likely in light of the current strength of polyethylene markets; rougher competition than is now expected could, of course, alter the picture considerably.

•

Future uses of lithium metal could "dwarf" some of the markets on which producers now depend. This optimistic long-range lithium outlook was given last week to worried stockholders of Foote Mineral, by company President L. G. Bliss. Concern about the firm's lithium business followed announced production cutbacks because of contract termination with the Atomic Energy Commission (*CW Market Newsletter, Nov. 8, '58*). Among potential lithium growth areas mentioned by Bliss: lithium aluminum alloys, organic synthesis, ceramics.

Bliss also revealed company plans to expand electrolytic manganese production facilities at Knoxville, Tenn., before '61. It would be Foote's second manganese expansion in three years.

SELECTED PRICE CHANGES — WEEK ENDING APRIL 27, 1959

	Change	New Price
UP		
Capric acid, dms.	$0.02	$0.355
Caprylic acid, dms.	0.02	0.355
Lauric acid, pure, dms.	0.02	0.385
Lead metal, prime, pigs	0.005	0.115
Mercury metal, 76 lbs. per flask	2.00	242.00
DOWN		
Blood, dried, 16-16½% ammonia, ton	0.25	7.00
Xylene, petroleum, indust., tanks, Chicago	0.015	0.285

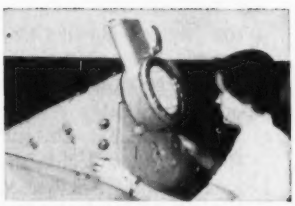
All prices per pound unless quantity is quoted.

more miles per tire...

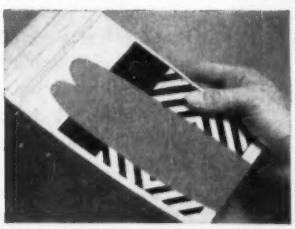
For its incredible strength and durability, rubber depends on carbon black. Without the millions of microscopic carbon black particles a tire contains ... it would wear out in a few days.

Columbian Carbon Research perfected a new method for putting carbon black into rubber ... a better and continuous method to disperse the essential black into latex — *without* the use of a dispersing agent. Columbian's Black Rubber process makes it possible to produce superior rubber products, provides longer tire life — a major step ahead for the rubber industry.

Columbian's Black Rubber process is one of many "firsts" ... the result of unceasing research to find new ways of using carbon black more effectively and efficiently. Today ... find out how Columbian research — and carbon black — might contribute to your product.



75,000 X!... Electron microscopy pioneered by Columbian as a pure research tool ... contributes major steps forward in the use of colloidal carbon and synthetic iron oxides for better products.



ANSWERS... to problems of better paints, plastics, ferrites, glass and other products ... come from Columbian's Mapico Iron Oxides Unit ... makers of synthetic pigments for high hiding power, UV screening, permanence.

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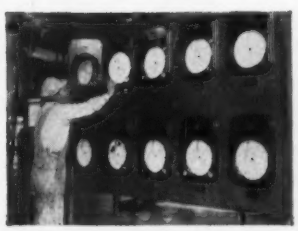


PRECISE... Every step in the production of all Columbian products is precision controlled ... to assure unsurpassed quality, uniformity, performance, efficiency.

Italian Expansion – New

The growing foreign-trade challenge to U.S. pharmaceutical firms manufacturing in Latin America received new impetus last month, when Lepetit—pharmaceutical branch of the large Italian pharmaceutical-chemical group, Ledoga-Lepetit—dedicated a $1.3-million pharmaceutical mixing and packaging plant in Mexico City.

The plant is Lepetit's fifth in Latin America, its twelfth manufacturing pharmaceuticals, pharmaceutical chemicals, steroids and ethical drugs in six far-flung countries. Lepetit also plans four more Latin American plants, has leaked its intentions to push deeply into the Near and Middle East. As the table (*left*) —showing the latest available figures —indicates, Lepetit is making significant gains in world markets.

Two-Pronged Attack: In close alliance with Lepetit in the global-expansion drive is the Ledoga branch of the Ledoga-Lepetit group. Ledoga produces tanning extracts, dyes, enzymes, animal feeds, veterinary products and furfural in 13 plants in Italy and Argentina.

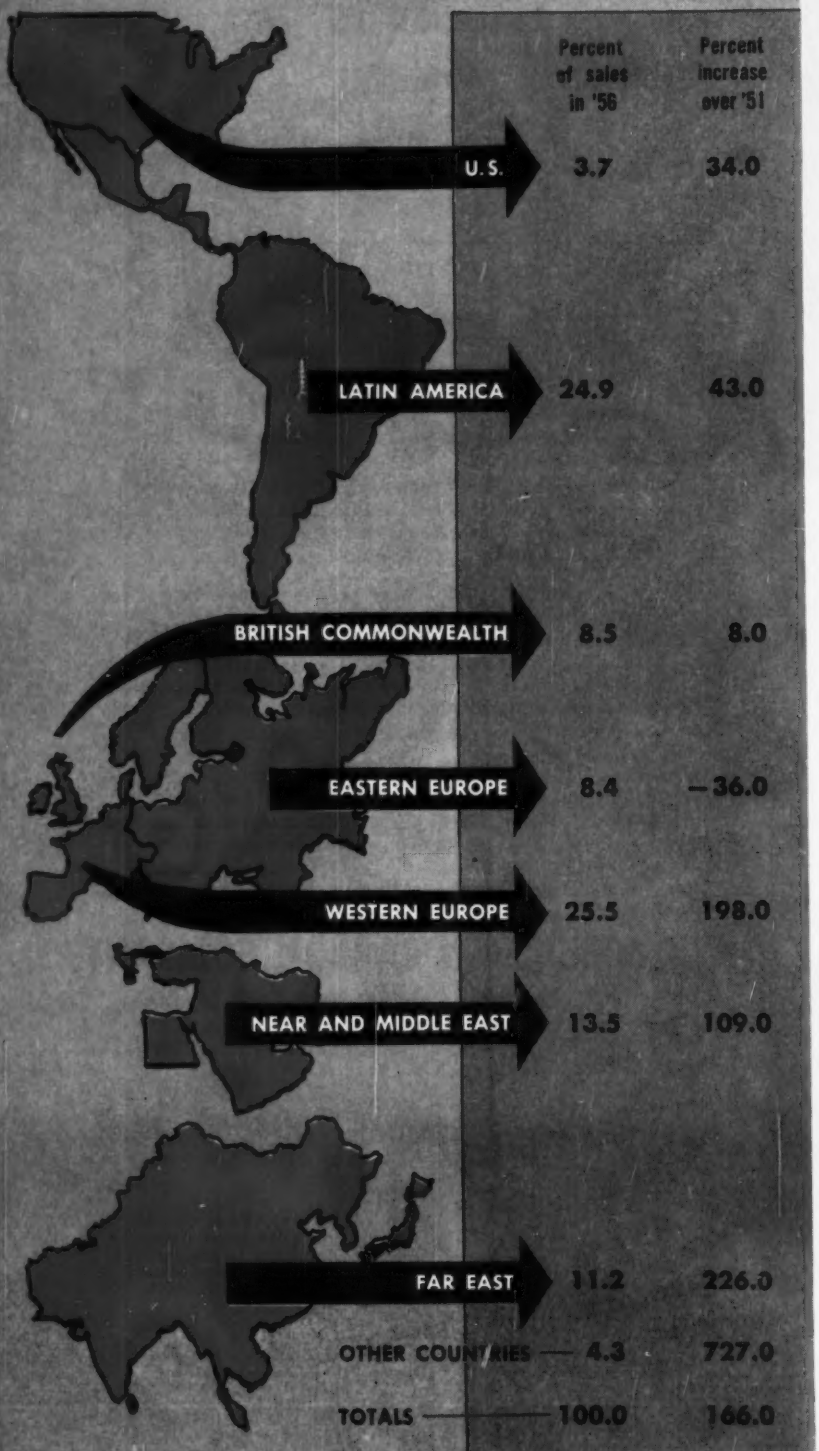
The group is directed by a holding company. Ledoga S.P.A. (Milan), which is capitalized at $10 million, reports annual sales for the group in excess of $45 million.

The pharmaceutical branch of the Ledoga-Lepetit group is composed of Lepetit S.P.A., Antibiotici Lepetit S.P.A., Societa Italiana Prodotti Schering per Azioni (Italian Schering), Ormonoterapia S.P.A. and several minor companies. This collection of pharmaceutical makers has boosted Lepetit toward the top among the leading European drug makers, resulted in its making licensing and technical agreements with many major producers here and abroad.

Of particular significance is Italian Schering, acquired by Ledoga-Lepetit in '51. The company, formally German-owned, was established in Italy some 40 years ago. Under Lepetit direction, it has close working agreements with Schering Corp. (Bloomfield, N.J.). Lepetit owns the entire capital stock of Italian Schering.

Basic chemical research for the Ledoga-Lepetit group is carried out

Lepetit's Export Picture



Challenge for U.S. Drug Makers

by a central research and development organization established in '56 under the Ledoga general management. Purpose of the centralized organization is to place greater emphasis on the study of new industrial chemical possibilities for the group. The research center, in company headquarters at Milan, is organized to operate also in the capacity of a professional consulting and research organization for outside firms. Major interests: industrial applications of processes and plant engineering.

Lepetit's Latin American growth has spurred the decision to set up separate headquarters for northern and southern Latin America. When the new Mexico City plant is in full operation—most likely by the end of '59—it will serve as headquarters for the firm's operations in Mexico, Central America, the Caribbean area, Venezuela and Colombia. The Buenos Aires affiliate—which just received government authorization to invest an additional $125,000 in its $4-million plant—will serve as headquarters for the southern area. Purpose of the split, according to a Lepetit director, is to facilitate communications, promote more-direct supervision of manufacturing and sales.

In addition to the Mexico City and Buenos Aires affiliates, Lepetit has a manufacturing affiliate in Santiago, Chile, and two in Brazil. Construction of a $4-million fermentation plant will start this year at Sao Paulo, Brazil; other plants are scheduled for Caracas, Venezuela, and also Colombia.

The Mexican plant, President and General Manager Basilio Aruffo tells *CW*, will have a capacity of 1-million units (i.e., packages of pills, capsules, syrups, injectables) per month.

Rapid Growth: Since '56, when Lepetit set up a sales office in Mexico, it has been chewing off chunks of the country's booming drug market, creating significant competition for Mexico's two leading producers—Lederle and Pfizer.

Lepetit's Mexican sales rose from $320,000 in '57 to an estimated $2 million in '59. Lederle, the largest producer, is expected to ring up sales of about $4 million this year; and Pfizer's '59 sales are expected to be about $3.2 million. Figures do not include bulk sales of pharmaceutical chemicals.

One factor in Lepetit's success, according to Aruffo, is the emphasis on an advertising and public relations campaign aimed at the practicing physician. Last year, the firm spent 30% more on advertising than it did the previous year. It will increase the outlay again this year, and in '60 it will double '59 expenditures, Aruffo told *CW* last week.

The advertising campaign woos the physician with elaborate color reproductions of operations performed by famous Mexican surgeons. Doctors are also presented with a laminated cross-section reproduction of a brain, drawn by five Mexican brain specialists. The entire campaign is aimed at doctors, not at the drug store operator. Aruffo says the campaign has paid off by opening "many doors originally closed to us, because we were latecomers to the Mexican market."

Management from Milan: Aruffo heads the Mexican plant's management team, but orders come from the parent firm in Milan, Ledoga S.P.A. which is a tightly held, close-knit family concern with a channel to every one of the 105 plants, warehouses, sales agencies and representatives in its far-flung empire. The top technical man and the medical director at the Mexican plant are Italians, from Lepetit in Milan; but a Mexican holds the treasurer's post and all sales and promotion work is done by Mexicans. The plant now employs 250 people, 50 of whom are on the sales staff.

Most of the production equipment in the Mexican plant is Italian-made, but some of the major electrical and other specialized equipment is U.S.-made.

Intercompany Rivalry: There's brisk rivalry between the various Lepetit affiliates. Each affiliate company is independent and competes with other affiliates in the complex. For example, Aruffo thought up the idea of presenting physicians with brochures illustrating surgical operations but did not pass along the idea to the Lepetit plant in Buenos Aires, Santiago or Sao Paulo, because—as he puts it—"we want to do a better sales job than they do."

The competition within the company reflects the competitive nature of the entire Ledoga-Lepetit group. Under the direction of its president, Baron Guido Zerilli-Marimo, the group—established in 1868—has become the most important pharmaceutical organization in Italy, one of the largest in Europe.

Baron Zerilli is outspoken for revisions in the Italian patent laws, reciprocal research agreements. He particularly wants existing laws changed to provide legal protection for drug patents. At present, Italian laws do not provide patent protection for these essential products. The Ledoga-Lepetit president pointed out that Italian firms with large research facilities favored strong patent laws, but that in Italy there are more than a thousand medium-size and small pharmaceutical producers who are fighting any change in patent measures. These companies are able to capitalize on the research discoveries of larger firms under present conditions.

The Italian pharmaceutical industry today has a capital investment in excess of $250 million, an annual output valued at over $200 million and 50,000 employees. The industry yearly exports something like $20 million worth of medicines and pharmaceutical raw materials.

Nature of the Threat: The big threat from Lepetit in Mexico is not to U.S. exporters to that country, but to U.S. firms producing in Mexico. Aruffo tells *CW* that his operation will not significantly affect U.S. exports to Mexico because most of the latter's pharmaceutical raw materials are imported. Production of basics will be Lepetit's next step, says Aruffo.

Lepetit's rapid growth in Latin America indicates that it is a force to be reckoned with wherever it sets up operations. Of broader significance to U.S. CPI management, however, is that Lepetit typifies the sort of competition U.S. overseas operations can expect to meet in the tightening race for world markets.

CW PHOTO

Wildlifer Swift (left) ponders CW question on pesticide pollution.

Pushing Pollution Research

Chemical industry representatives at last week's U.S. Public Health Service conference on pollution heard a call for more knowledge about the effects of chemical pesticides on wildlife. About 260 biologists, conservationists, pollution-control officials and scientists attended the five-day seminar in Cincinnati.

Pollution and conservation experts urged the chemical industry to assert its lead in research on such effects. Seth Gordon, a member of the President's Water Pollution Control Advisory Board, said that manufacturers of pesticides "will have to advance money in this research out of self-defense. Otherwise," he cautioned, "they'll get condemned along with the users."

Ernest Swift, executive director of the National Wildlife Federation, said that regulation of the use of pesticides may be at least two years away, but "pressure is building up for such regulation." Both Swift and Gordon agreed that regulation of use will come before there is any move to further regulate the manufacture of pesticides on a large scale.

"Chemical companies are aware of this issue," Gordon said, "and in many instances have made studies. But so far, there hasn't been a concerted approach—they don't exchange information because apparently they are afraid to divulge findings to each other."

Gordon, Swift and several others at the meeting agreed that the chemical industry in general has been careful in disposal of wastes. "Chemical firms have been more careful than some others," Gordon observed.

I. B. Byrd, of the Alabama Department of Conservation, repeated the oft-aired charge that certain species of wildlife have been virtually eliminated in some southern states due to use of insecticides in eradicating the imported fire ant. He said the usual treatment is 20 lbs. of pesticide/acre. So far, said Byrd, 901,351 acres of land have been treated in nine southern states, and another 21,676,464 acres are due for treatment under the 1957 plant pest act.

C. C. Cottam, of the Bessie Welder Wildlife Foundation in Texas, who was chairman of a panel discussing the effects of pesticides on aquatic life, said he doesn't feel that conservationists have "any particular antagonism toward the chemical industry as such. The big need is for a cooperative approach by conservationists, government and the chemical industry."

Waterside Site Boom

Despite drastic cutbacks in industrial construction (31%) and equipment expenditures (18%) last year, waterside plant development actually increased over the '57 rate, *CW* confirmed last week. Of significance to chemical process industries management is the fact that the chemical and petroleum industries continued to set the pace for waterside developments.

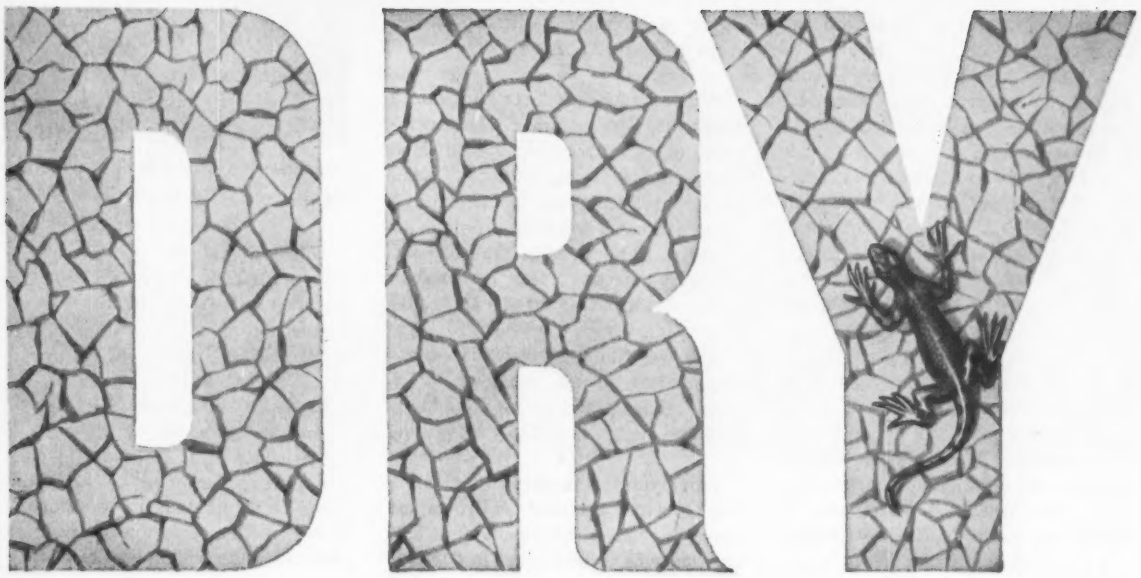
Braxton Carr, president of American Waterways Operators, Inc., the national association of the barge and towing vessel industry, said that a survey conducted by his organization showed that 488 waterside industrial plants were built or expanded in '58, compared with 486 during '57. In '56, a record-breaking total of 565 locations were developed, he said.

And, according to federal and private estimates, '59 will see an increase in construction of facilities along the navigable waterways.

Chemical Firms Active: The association's survey revealed that 84 industrial waterside projects were under way in the fourth quarter of '58. The following CPI projects were included:

- Glidden Co.'s organic chemical division's first steps toward a $2-million chemical plant along the Atlantic Intracoastal Waterway at Jacksonville, Fla.
- Shell Chemical Corp.'s site purchase — 180 acres on the Delaware River near Burlington County, N.J., for a resins and plastics plant.
- American Cyanamid's construction of a plant on the Gulf Intracoastal Waterway near Pensacola, Fla.
- Reichhold's erection of a $1-million synthetic resins plant on Greens Bayou Waterway at Houston, Tex., a $5-million phthalic anhydride plant on the Hudson River at Elizabeth, N.J., and plans to construct a phenol plant on Puget Sound at Tacoma, Wash.
- Allied Chemical Corp.'s expansion of facilities on the James River at Hopewell, Va.
- Olin Mathieson Chemical Corp.'s plans for a $4-million metals research laboratory and pilot plant on Long Island Sound at New Haven, Conn.
- Dow Chemical Co.'s building of

If it must stay



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a caustic terminal on the Mississippi River at St. Louis, Mo, and a $65-million chemical plant at Plaquemine, La.

• Mississippi Valley Chemical Co.'s completion of a liquid fertilizer plant on the Mississippi near Palmyra, Mo.

• Kaiser Aluminum and Chemical Corp.'s plans for purchase of 3,000 acres for a plant to be constructed on the Mississippi near Randolph County, Ill.

• Escambia Chemical Corp.'s $1.2-million investment in its research and development center on the Norwalk River at Wilton, Conn.

• Weil-Elliot Chemical Co.'s finishing of a $41,000 plant on the Ohio River at Louisville, Ky.

• Fluor Corp. Ltd's plans for both an alkylation plant and isomerization plant on San Francisco Bay at Richmond, Calif.

• Hercules Powder Co's completion of a nitrogen tetroxide pilot plant at Hercules, Calif.

• Pennsalt Chemicals Corp.'s expansion of its hydrofluoric acid plant at Calvert City, Ky., on the Tennessee River.

• Tennessee River Pulp and Paper Co.'s plans for a $40-million pulp and paper mill on a 1,500-acre site at Counce, Tenn.

• Alabama Metallurgical Corp.'s erection of a $4.5-million magnesium metal plant on a 470-acre site at Selma, Ala., on the Tensaw River.

• Gulf States Paper Corp.'s investment of $20 million in its facilities at Tuscaloosa, Ala. on the Warrior Tombigbee Waterway.

LABOR

Productivity Dip: A harbinger of other analyses is seen by Washington observers in the pattern set by latest statistics for the steel industry. Observers expect the pattern to be repeated when chemical industry operating figures for '58 are compiled several months from now.

As expected, there was a significant dip in steel productivity. Bureau of Labor Statistics figures show a recession-year drop of 6.6% in output per worker.

There has been no indication of what is happening this year, but the rise has likely been sharp. The pattern of two previous recession years, '49 and '54, show that steep climbs occurred the following years as the economy made a comeback. This year, such climbs would be even more accentuated because of considerable unemployment still remaining in the industry.

Productivity figures in a score of basic industries — going back to the base year '47 — show a general trend of about two percentage points annual increase, including both recession dips and prosperity peaks.

Interesting point: the sharpest productivity rises since '47 have occurred in two of the less-prosperous industries — coal and rails. Anthracite mining figures shot up from 100 to 201.1 and railroad transportation from 100 to 155.5.

•

Neoprene Raise: At Du Pont's Louisville, Ky., neoprene plant, members of the Neoprene Craftsmen Union, an independent local, voted to accept a company offer granting wage increases ranging from 4 to 6¢/hour. Ratification of the proposal, following rejection of an earlier one, prevented a strike of about 1,400 employees.

The wage hikes, which take effect immediately, came about under a wage reopener clause in a contract expiring in April, 1961.

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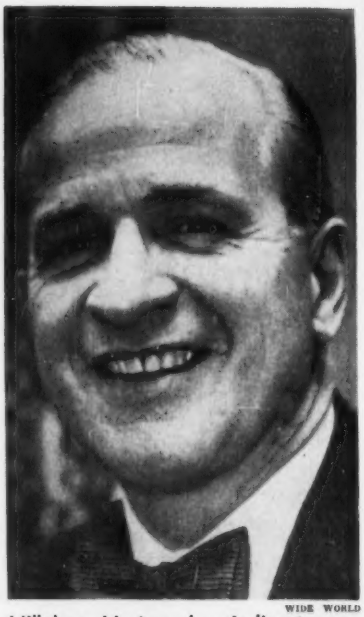
Employment Practices: In California, Governor Edmund G. Brown has signed a fair employment practices law that will go into effect in September. The law is said to be modeled closely after that in effect in New York State. It sets up a commission designed to "hasten the end of discrimination because of race, creed or color."

LEGAL

Pollution Warning: In an indirect warning to chemical process firms, the New York State Air Pollution Control Board has awarded Niagara Falls, N.Y., and the Niagara Frontier area top priority in its program of combating air pollution.

State Health Commissioner Herman Hilleboe (*see photo*) praised the local control board for its efforts in smoke abatement, but warned that further efforts, including establishment of a testing laboratory, "are essential."



WIDE WORLD

Hilleboe: He issued an indirect warning to CPI firms on air pollution.

Hilleboe told the board that "by helping yourself, you will be helping the state board and will be acquainting the state legislature with the gravity of the problem."

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More on Spray Case: A U.S. court of appeals is considering a plea by 13 Long Island, N.Y., residents to block the U.S. government from further aerial DDT spraying in its campaign against the gypsy moth. The residents seek to prevent "unwarranted invasions" of their properties.

The group was defeated last June in Brooklyn federal court (*CW, July 5, '58,, p. 34*), where Judge Walter Bruchhausen denied them a permanent injunction against the government's use of DDT on their lands. The insecticide was sprayed by the U.S. Dept. of Agriculture over more than 600,000 acres in '57.

Attorneys for the group said in appealing the case that despite government claims that no pasture lands were sprayed, at least five such areas were "doused" with DDT. A Justice Dept. attorney said that there was no immediate plan for further spraying of the area, added that present conditions indicate that the moth is under control.

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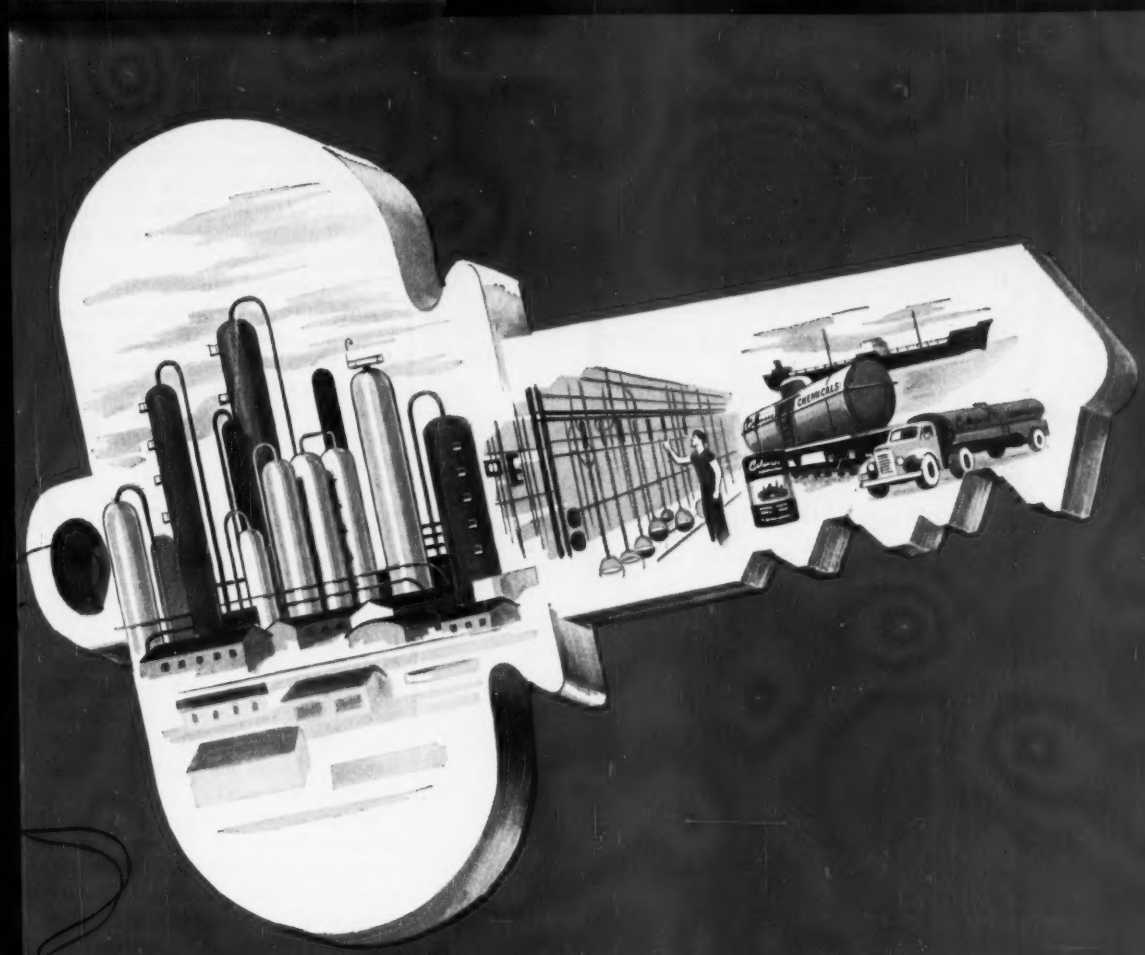
Viscose Pollution Battle: American Viscose Corp. has asked for a rehear-



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ADMINISTRATION

ing on a Virginia State Water Control Board decision requiring the firm to pay $154,770 for a fish kill in the south fork of the Shenandoah River at Front Royal.

The company has charged that the board's order was "unreasonable, unnecessary and illegal." The board ruled March 26 that chemical wastes from the viscose plant were responsible for killing an estimated half-million fish, ordered payment within 60 days.

More Scientists Coming

Scientists and engineers again led the field in a recently released tabulation of earned degrees in institutions of higher learning during '57-'58. (This is in terms of percentage increase over the '56-'57 period.) To some observers, these figures indicated that if there is a scientific manpower shortage, college graduates are rapidly closing the gap.

Statistics made available by the Engineering Manpower Commission of the Engineers Joint Council show that science graduates receiving bachelor's degrees in the last academic year registered a 9.5% gain over the previous school year. The number of engineering graduates rose 13.1% for the same period. In all educational fields, a gain of 7.5% was registered.

The number of master's degrees granted increased by 322 but there was no significant change in the number of doctorates.

Out of a total of 14,352 bachelor's degrees awarded in the physical sciences, there were 7,010 chemistry graduates in '57-'58. Chemists received 1,125 of 3,034 master's degrees awarded in the same category, and 939 doctorates out of 1,655 presented.

IDEAS

Pharmaceutical Relations: The National Pharmaceutical Council (New York) has appointed a 21-man committee to study the industry's relations with hospital pharmacies. Designated the Hospital Pharmacy Practice Committee, the body will seek to promote cooperation between the industry and physicians, hospital pharmacists and administrators.

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Back to School: Monsanto Chemical Co. this fall will continue its 13-

year-old program of granting paid academic leaves of absence to chemists and engineers who want to continue their studies. Four Monsanto employees will enter colleges this fall under the program. The company pays the empoyeee's full salary, his tuition, books and other fees, the cost of locating him and his family at the school and relocating him at a Monsanto plant afterwards. A total of 36 employees have been granted academic leaves by the firm.

KEY CHANGES

Daniel Friedland, Herbert Halpert, Morton Harris, Harry H. Hachen to directors, Trubek Laboratories (East Rutherford, N.J.).

Stewart R. Ruch to director, **E. A. Cahill, Jr.**, to secretary, Allied Laboratories (Kansas City, Mo.).

Mel R. Baruh, George W. Burgess, Jack H. Grady to vice-presidents, Fibreboard Paper Products Corp. (San Francisco).

Herbert Hirschland to vice-president, Commercial Development Division, Metal & Thermit Corp. (New York).

Victor R. Hurka to director of the technical laboratory, Dyes and Chemical Division, Du Pont (Wilmington).

James W. Alsdorf, Patrick H. Hoy, William J. Friedman, Edward E. Voynow to directors, Union Asbestos and Rubber Co. (Chicago).

Fred A. DeMaestri, Sidney D. Kirkpatrick to directors, Michigan Chemical Corp. (St. Louis, Mich.).

Frank L. Magee to chief executive officer; **M. M. Anderson, Leon E. Hickman, Lawrence L. Litchfield, Jr.,** to executive vice-presidents; **Theodore W. Bossert, Robert A. Learnard** to vice-presidents; Aluminum Co. of America (Pittsburgh).

Alfred E. Raws, Jr., to treasurer, Thiokol Chemical Corp. (Trenton).

Walter J. Roider, Jr., to general manager, international department, Borden Chemical Co. (New York).

DIED

John B. Calkin, president Calkin & Bayley, Inc. (New York), industrial consulting firm.

Dust Performs for Plant's Pollution-Control Movies

In Chicago this week, Procter & Gamble told American Industrial Hygiene Association how study of high-speed motion picture sequences, like the one shown here, enables it to control in-plant dust.

P&G's industrial hygienist, Reuben Beaman, who presented the new dust-control aid, explains that a study of the movies took the guesswork out of where to locate dust collecting equipment.

"Environmental control starts on the drawing board," says Beaman. "And, although original design overcame the problems that could be foreseen, we were handling a new product, a silica flour with the flow characteristics of water. Once the first production line started up, it was evident that some design changes were needed."

The principal problem arose because dust sources were decided upon according to a guilt-by-association technique. "We assumed that high dust-counts in a particular area were the result of dust coming from the adjacent equipment. This may be true, but the exact source often remains a mystery," declares Beaman.

Through the use of movies—which pinpointed the dust source and its pattern—exact location and type of control equipment were easily determined. P&G hit on the idea through its long-time use of high-speed photography to check machine adjustments on high-speed filling lines. The machine-adjustment movies of the new line clearly revealed the dust sources and patterns.

Although the dust, in the illustration shown, is heavy enough to be easily seen, movies could be used to study patterns in dust concentration as low as 5-million particles/cu.ft., Beaman believes. But the movies are only a qualitative tool. Actual quantities of dust would have to be determined from physical counting devices once the concentration drops below 10-million particles/cu.ft.—the level below which dust is not readily seen, except in intense light.

The camera costs about $2,000, requires skill to use. But the cost is small compared with that of hooding, enclosures and ducts that may be unnecessary or improperly placed, says Beaman.

Thumbs Down: Research-Cottrell's Al Walker offers further evidence that rules of thumb and assumptions can't be counted on.

For example, once the dust is effectively introduced into the collection system, the proper placement of equipment in the collection train becomes an important factor in collection efficiency. Traditionally, mechanical collectors have preceded electrostatics when combination collectors are used.

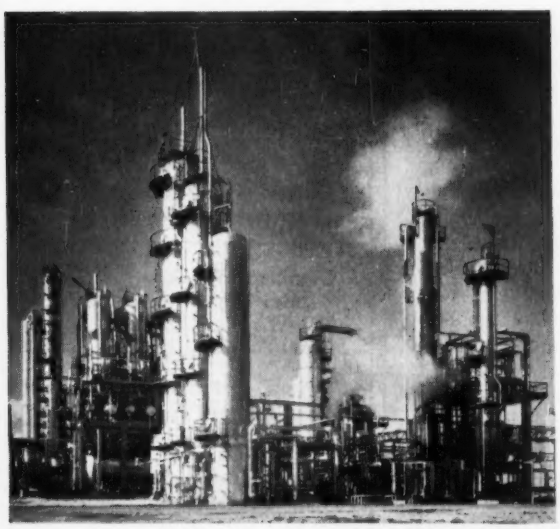
Transparent model study techniques, revealed by R-C

ETHYLENE OXIDE-GLYCOL PLANT ON STREAM FOR CALCASIEU CHEMICAL CORPORATION

Lummus Designs and Engineers Plant to produce 60,000,000 Lbs./Year of Ethylene Oxide or 8,000,000 Gallons/Year of Ethylene Glycol

Calcasieu Chemical Corporation's new ethylene oxide-glycol plant at Lake Charles, Louisiana is on stream and producing 8,000,000 gallons annually of ethylene glycol, used principally as a permanent anti-freeze, or 60,000,000 lbs/year of ethylene oxide.

Designed and engineered by The Lummus Company, the plant utilizes the Shell Development Company process. The facility is staffed and operated by employees of Petroleum Chemicals, Inc. P.C.I. will also supply ethylene raw material to the new plant from an adjacent ethylene unit which was also designed, engineered and constructed by The Lummus Company.



The Shell Process, which offers the advantages of unusually high yields and virtual elimination of the waste disposal problems encountered in the Chlorohydrin Process, is conducted in two steps. The first step is direct catalytic oxidation of ethylene with oxygen in fixed bed reactors. Here ethylene oxide, valuable petrochemical intermediate, is produced for use by manufacturers of detergents and other surface active agents, plasticizers, solvents, textiles, drugs and many other petrochemical compounds.

The second step of the Shell Process calls for thermal hydration of ethylene oxide to ethylene glycol, essential to manufacturers of anti-freeze, explosives, plasticizers, fibers, resins, hydraulic fluids and many more chemical products.

This is the third ethylene oxide unit engineered and constructed by Lummus, based upon the Shell Process. For ethylene oxide and ethylene glycol, or for any type of chemical or petrochemical plant, Lummus' half century of world-wide experience on more than 800 plants for the process industries is at your disposal.

THE LUMMUS COMPANY, 385 Madison Avenue, New York 17, N. Y., Houston, Washington, D. C., Montreal, London, Paris, The Hague, Maracaibo. *Engineering Development Center:* Newark, N. J.

Visit The Lummus Exhibit, Fifth World Petroleum Congress Exposition, New York Coliseum, June 1-5, 1959

PRODUCTION

last year (*CW, Feb. 22, '58, p. 74*), along with other study methods, are showing that the two most important arguments in favor of placing mechanicals first in the collection train, are easily shattered.

One argument states that the high pressure drop in the mechanical collector will assure good gas-flow distribution to the precipitator. The model studies now show that the gas distribution pattern is sometimes poorer after leaving than it is before entering the mechanical collector. And poor gas distribution patterns destroy the effectiveness of electrical precipitation.

The other argument states that a mechanical collector preceding the electrical collector will remove coarse particles. This minimizes erosion and resuspension in the precipitator, improves performance. But new studies show that collection of the coarse particles in the mechanical can result in an increase in particle resistivity (smaller particles sometimes have higher resistivity). And higher resistivities can make electrostatic precipitation more difficult, reduce operating efficiency.

Also, without the erosive action of the larger particles, some fine dusts tend to cling to the precipitator electrodes. The resulting corona suppression leads to serious reduction in precipitator collection efficiency.

Over-all Study: The problems of proper location and design of units in the collection train show that individually bought units don't always perform to guaranteed efficiencies. U.S. Steel for one, has overcome this by placing the entire collection project under a prime contractor (*CW, Dec. 14, '57, p. 75*).

Further evidence of the trend to over-all, rather than individual, unit design: R-C, which once was known only for electrostatic precipitators, now makes the Cyclo-trell mechanical collector, has a scrubber-cooler in the development stage.

Industry spends $300-500 million/-year in control measures (the chemical industry contributes about 1.5% of its operating expenses); total pollution damage is estimated at $2 billion/year. P&G and R-C underscore industry's growing awareness that more efficient application of control equipment can reduce the damage toll, yield in-plant benefits, too.

CHEMICAL WEEK • ADVERTISERS' INDEX

May 2, 1959

tracers SECTION

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PRODUCTION EQUIPMENT

Magnesium Tote Bins: Tote System Inc. (Beatrice, Neb.) has added magnesium bins to its standard line. Other construction materials for the bins: aluminum (accounting for 90% of bins made), carbon, and stainless-steels.

•

Dust Sampler: The Day Co. (810 Third Avenue N. E., Minneapolis 13) is now offering an Iso-Kinetic dust sampler. The sampler measures discharge from dust-control equipment.

•

Aluminum Pipe: Reynolds H-E thick-jointed aluminum pipe, which was introduced in Schedule 80 sizes last December, is now being made in Schedule 40 sizes by Reynolds Metals Co. (Box 2346, Richmond 18, Va.). Pipe walls are tapered to give extra strengths at joints, eliminate excess metal in the body. Pipe is available in 30-ft. and 40-ft. lengths.

•

Algaecide: A new liquid inhibitor for control of microbiological growths in cooling towers, evaporative condensers, distribution pans and pump intake screens is being offered by Calgon Co. (Box 1346, Pittsburgh 30). Called Biocide RP, the inhibitor may be "slug-fed" or dumped into the system at the rate of 1 oz./50 gal. of water at weekly or less-frequent intervals. The inhibitor is claimed to protect surfaces even when the water in the system isn't circulating or has been drained out.

•

Chemical - Resistant Clothing: Chrysler Textiles Inc.'s Acid Resistant Clothing Div. (49 West 37th Street, New York) is out with a new line of chemical-resistant, antistatic laboratory coats. The dynel garments are said to bring body moisture to the surface for rapid evaporation, eliminate the clammy feeling associated with some clothing of this type.

•

End-Point Analyzer: An end-boiling-point analyzer for continuous, automatic use with hydrocarbons in the 200-600 F range is a new offering of Technical Oil Tool Corp. (1057 N. La Brea Ave., Los Angeles 38). The unit is weatherproof, explosion-proof, will analyze with ±1F accuracy at the operating unit.

•

Silicon Carbide Foam: The Car-

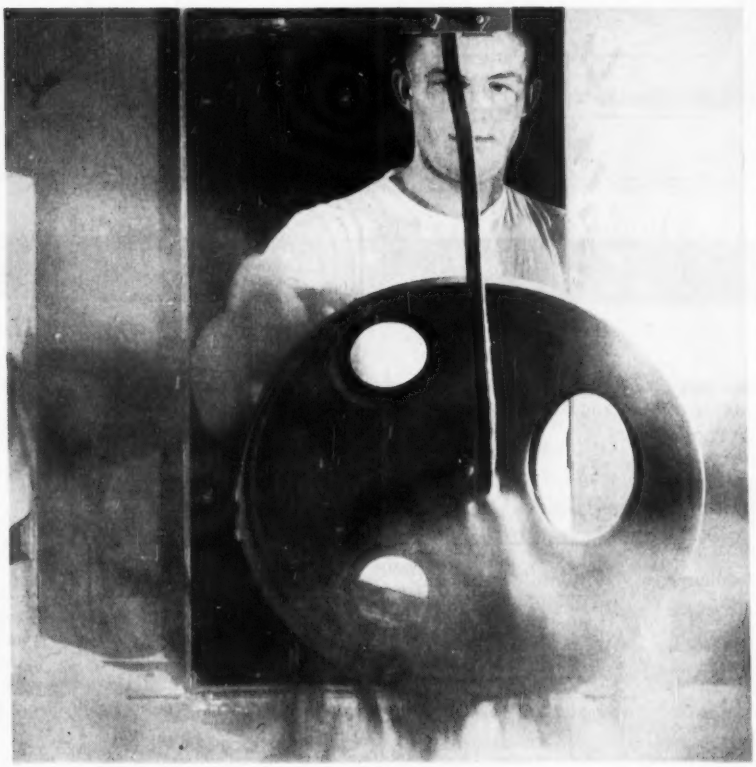
borundum Co.'s Research and Development Div. (Niagara Falls, N.Y.) is making pilot-plant quantities of a new light-weight corrosion-resistant silicon carbide foam with high porosity and thermal insulating properties. It can be used at temperatures up to 4000 F. The low-density foam weighs 16-18 lbs. cu.ft.; the high-density foam weighs 30-35 lbs. cu.ft. The high-density foam will support 750-psi. loads; low density, 85-psi. loads. Both foams' porosities range between 80-90%. Suggested applications: in nuclear reactors, as furnace insulation, catalyst support, hot-gas and wet-corrosive filters.

•

Glass Heat Exchangers: Corning Glass Works (Corning, N.Y.) has added a new coil-type heat exchanger made by Q.V.F. Limited (England) to its line of Pyrex shell-and-tube and cascade heat exchangers. Capacity: 2½ to 60 sq.ft.

•

Controlled-Capacity Pumps: The Clark-Cooper Co. (300 Market St., Palmyra, N.J.) is out with a new line of controlled-capacity metering pumps. Capacities range from one drop/13 strokes to 1,000 gal./hour at discharge pressures up to 10,000 psi. The line includes both plunger and diaphragm types; pumps are adjustable for delivering any percentage of capacity. Wetted and non-wetted parts are available in a variety of metals and plastics to suit individual service applications.

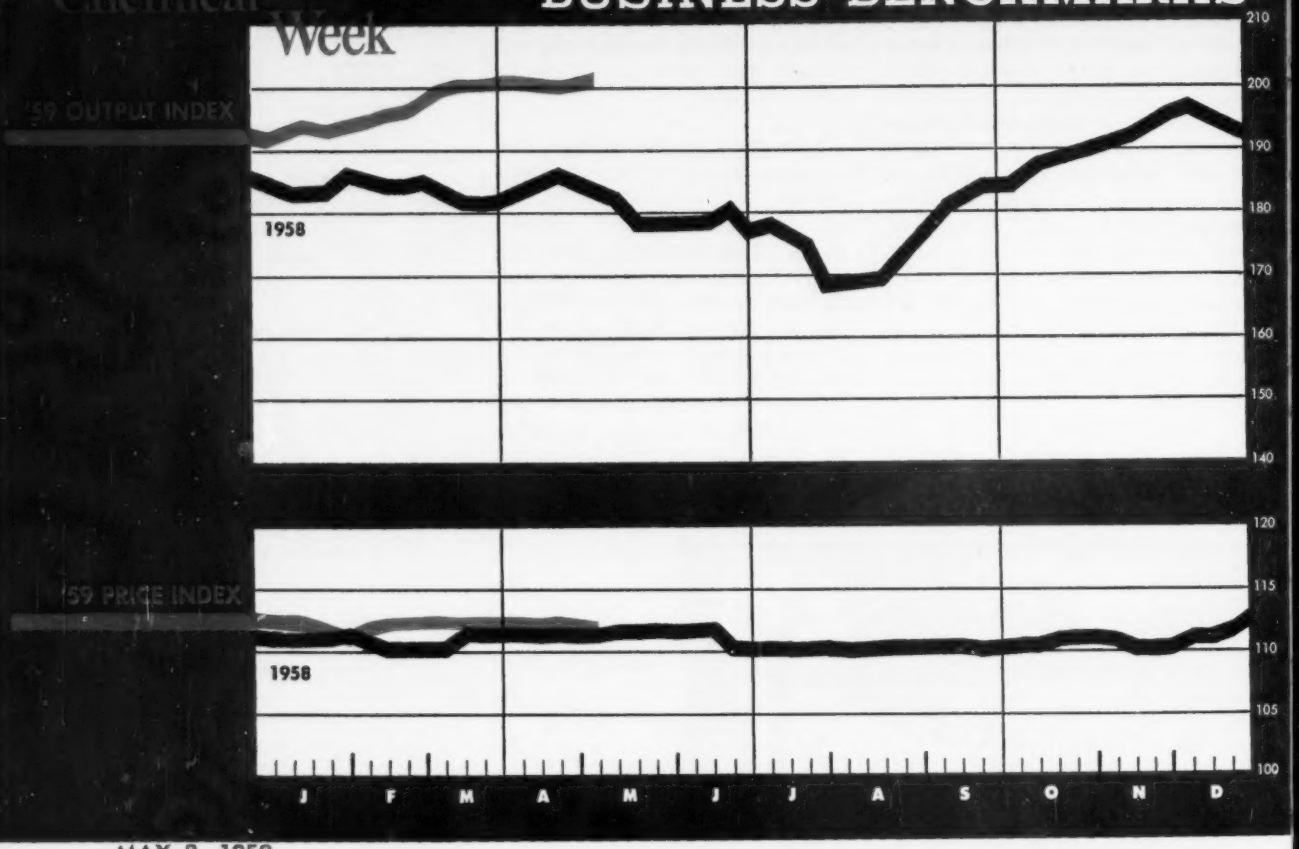


Powder "Painting" for Protection

"Painting" with powder (*see also p. 38*) is part of the finishing treatment given transformer covers at Westinghouse's Athens, Ga., plant. In the process, available to U.S. companies through Polymer Processes, Inc. (Reading, Pa.), the covers are first dipped in fluidized cellulose acetate powder. Excess powder is blown off (*step shown*), and then the cover is baked. Coating not only prevents corrosion of the metal but also provides a measure of electrical insulation—i.e., rodents that stand on the cover while gnawing through leadout wires won't short-circuit the equipment.

BUSINESS BENCHMARKS

Chemical Week

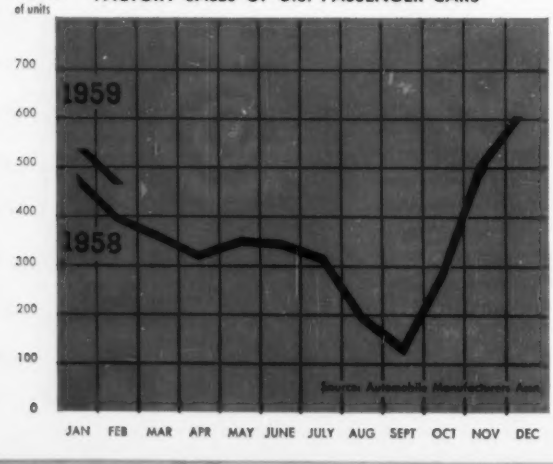


MAY 2, 1959

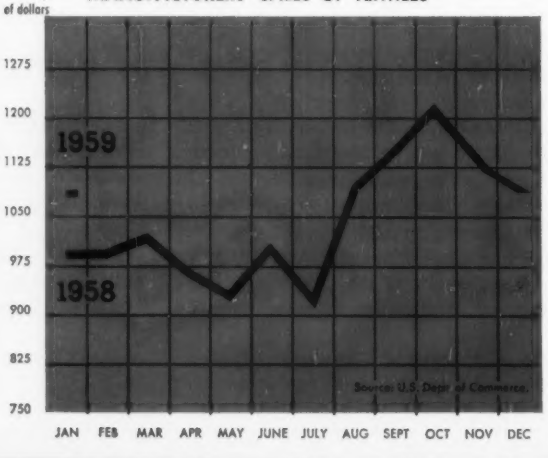
WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-1949=100)	201.4	201.6	179.0
Chemical Week wholesale price index (1947=100)	112.4	112.2	111.0
Stock price index (11 firms, Standard & Poor's)	55.49	54.09	38.66
Steel ingot output (thousand tons)	2,683	2,657	1,270
Electric power (million kilowatt-hours)	12,609	12,604	11,107
Crude oil and condensate (daily av., thousand bbls.)	7,133	7,134	6,268

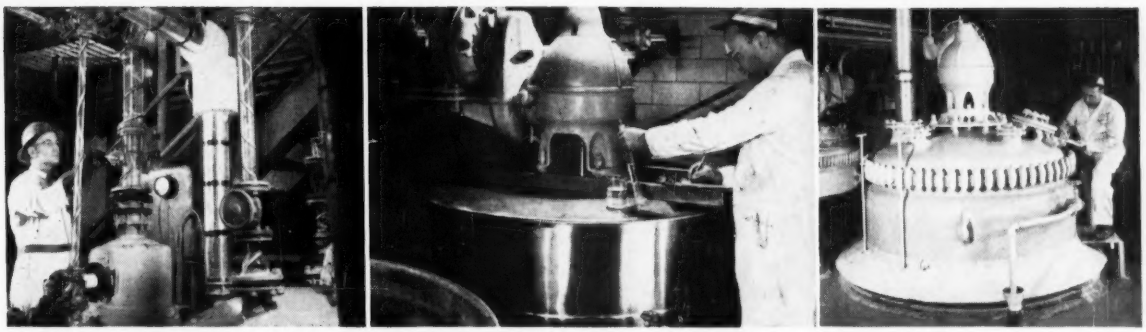
MONTHLY INDICATORS—(millions of dollars)	Manufacturers' Sales			Manufacturers' Inventories		
	Latest Month	Preceding Month	Year Ago	Latest Month	Preceding Month	Year Ago
All manufacturing	28,544	28,143	25,542	49,763	49,503	52,445
Chemicals and allied products	1,958	1,932	1,783	3,750	3,764	3,848
Petroleum and coal products	3,079	3,043	2,759	3,261	3,264	3,542
Paper and allied products	972	942	877	1,470	1,451	1,453
Textile products	1,123	1,102	1,001	2,461	2,487	2,638

FACTORY SALES OF U.S. PASSENGER CARS



MANUFACTURERS' SALES OF TEXTILES





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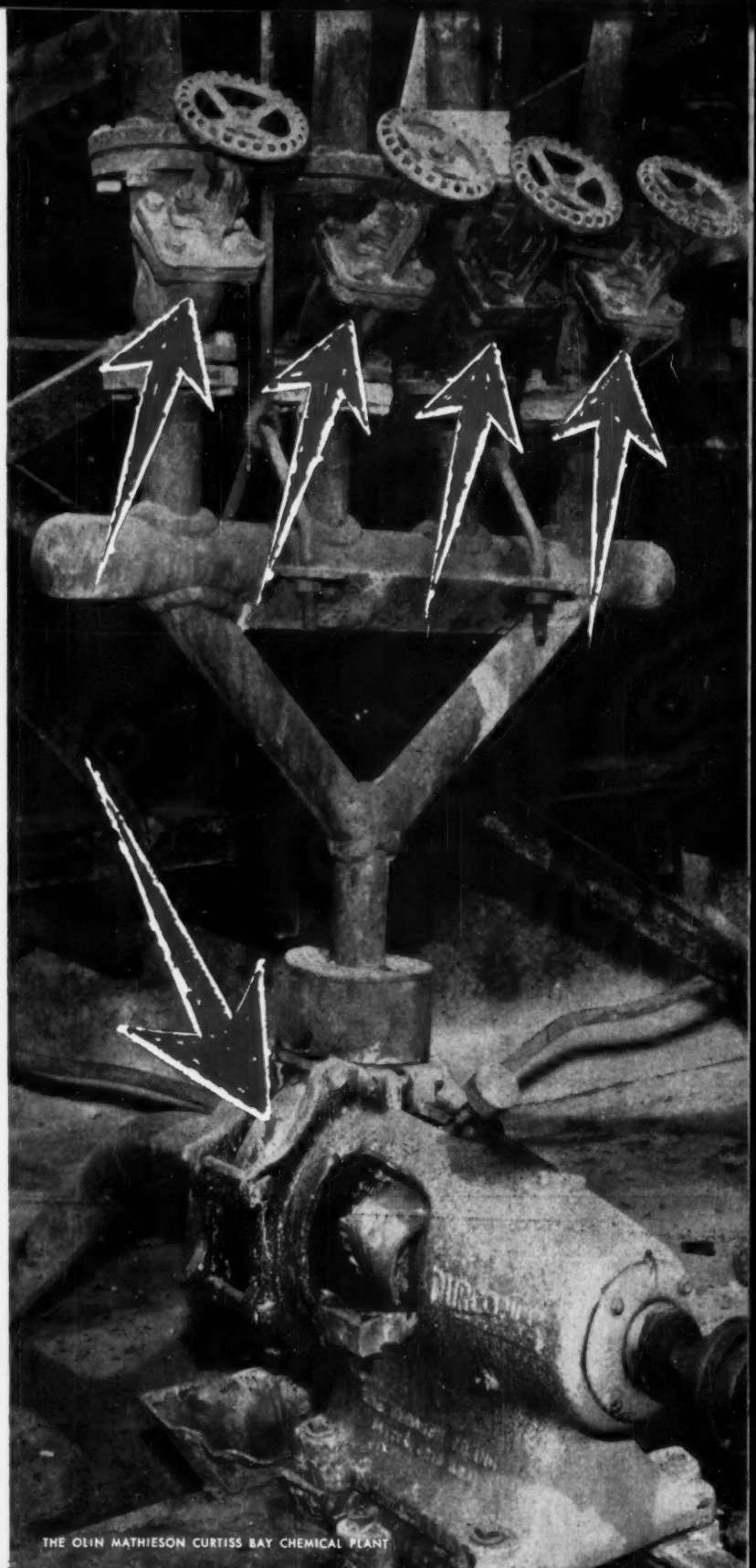

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